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1951

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APR 12, 1951

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# The Iron Age

THE NATIONAL METALWORKING WEEKLY

April 12, 1951

CONTENTS PAGE 2

## Reflections OF AN Engineer

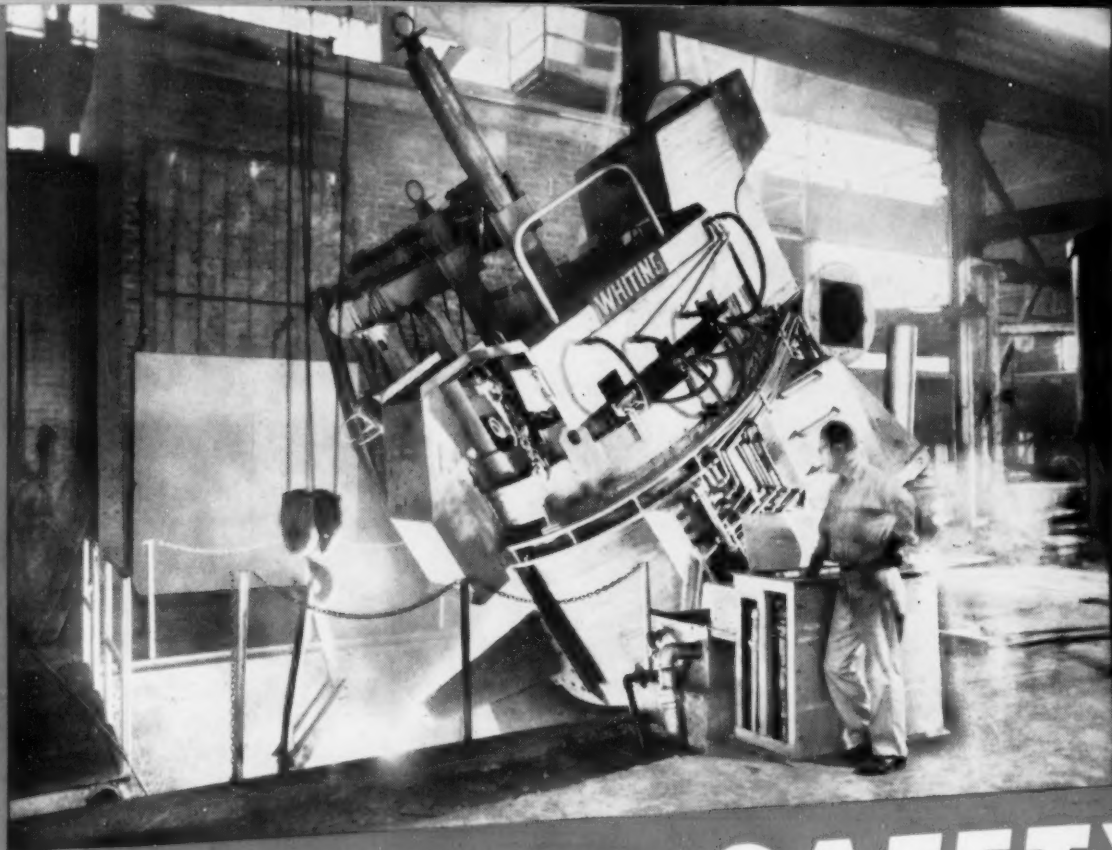


To the progress  
of machine design  
and the efficiency of  
American manufacturing,  
New Departure has  
contributed more than  
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*Nothing Rolls Like a Ball...*

## NEW DEPARTURE BALL BEARINGS

NEW DEPARTURE • DIVISION OF GENERAL MOTORS • BRISTOL, CONNECTICUT

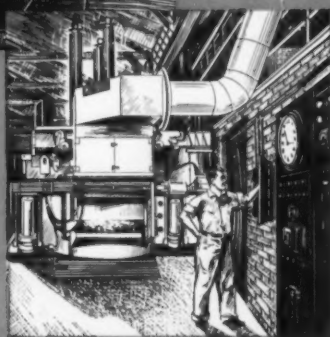


## Hydro-Arc brings new **SAFETY** to electric melting



**THE  
OLD  
WAY**

**THE  
NEW  
WAY**



Hydro-Arc brought new safety to electric-arc furnace operation when it developed the automatic electrode clamp and arm. Until then, furnace operators had to climb over the furnace, braving terrific heat and choking fumes to pry loose tight wedges or screw clamps, to slip electrodes or add new lengths. Many furnaces are still in operation which use these obsolete methods.

The Hydro-Arc electrode clamp and arm permits the operator to slip electrodes from the floor by simply turning a conveniently located handle. These clamps and arms are available separately to replace old-fashioned wedge or screw-type clamps. Information will be sent on request.

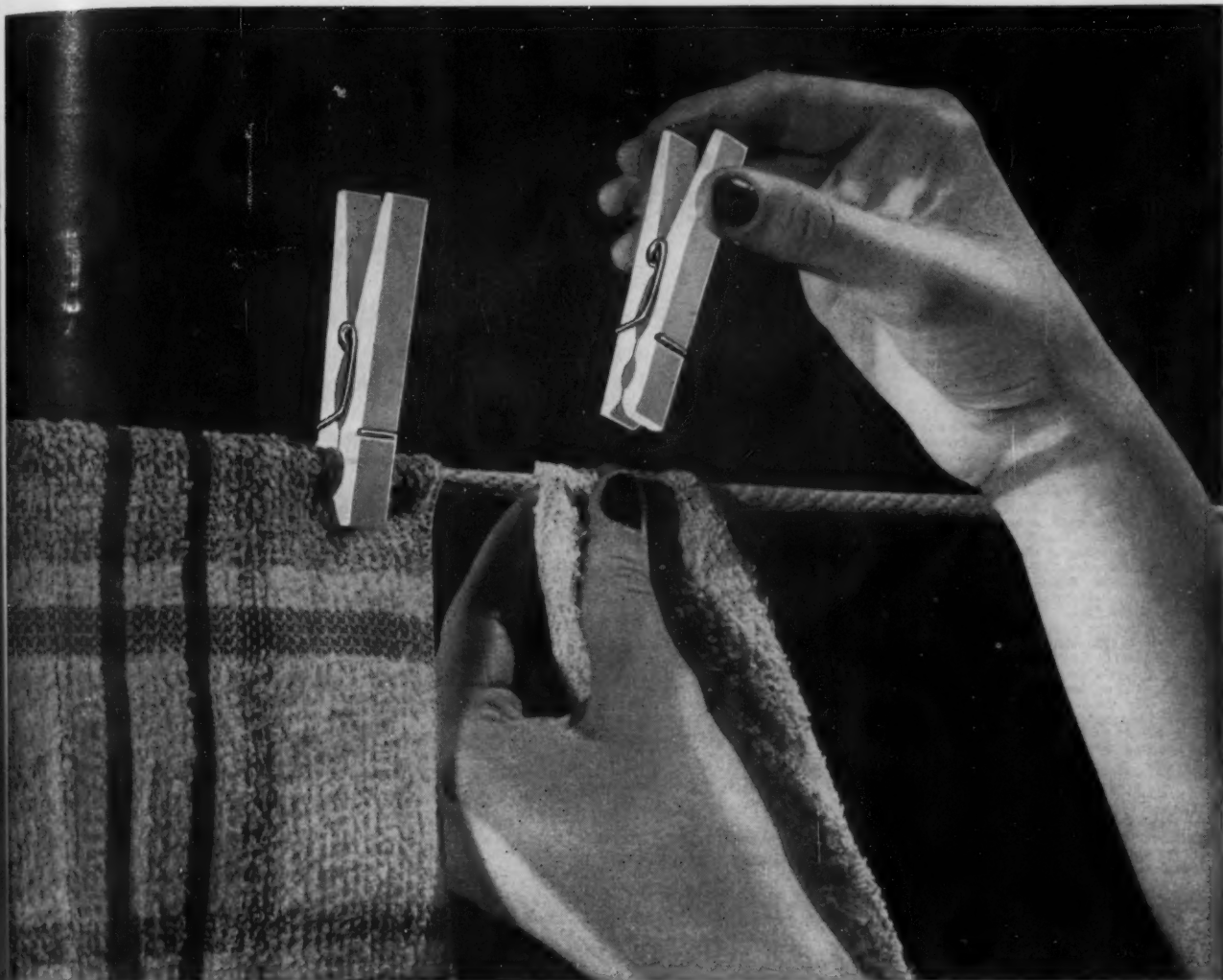
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FURNACES**

*for lower cost  
electric melting*

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## Little fellows with a BIG GRIP

Handy gadgets, those pincer-type clothespins. They're so easy to apply, and they hold fast with such tenacity. The "works" of these popular clothespins is a simple spring of galvanized steel wire.

Bethlehem makes many tons of clothespin wire each year for this special use. Exact requirements must be observed in analysis, tensile strength, size, and coating. One of the tests, for example, requires this kind of wire to with-

stand wrapping around its own diameter without flaking, cracking or peeling of the galvanized coating. Since housewives won't stand for rust stains on their wash, the wire we supply has a high-quality coating of zinc—one that gives long, faithful protection against rust and corrosion.

In our modern wire mills we make just about every kind of steel wire. Some are general-purpose grades; others are tailor-made for

a single application. And while there's no such thing as perfection in making steel, our wire customers can back up our assertion that we bat pretty close to 1,000. If you're interested in discussing steel wire, we'll gladly arrange for one of our experienced engineers to visit you.

**BETHLEHEM STEEL COMPANY**  
BETHLEHEM, PA.

*On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. Export Distributor: Bethlehem Steel Export Corporation.*

**BETHLEHEM WIRE**



April 12, 1951



# IRON AGE

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### THE IRON AGE

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# IRON AGE *summary*

*iron and steel  
industry trends*

**Steel squeezed in tightening spiral of demand**

**. . . CMP is no procurement cure-all . . .**

**Steel financial analysis reveals new records.**

**Procurement Battle**—The battle for steel is becoming so intense this week that something must give soon. The Controlled Materials Plan may come just in time to prevent a breakdown of the priority system of the National Production Authority. But steel users who don't already know the CMP label is no cure-all will quickly find it out. Steel procurement will be the most important business of many manufacturers for months to come.

**DO Inflation**—DO's are fast losing their effectiveness, despite the fact that percentages of steel set aside for such priority have been repeatedly increased. Some steel companies have DO tonnage on certain products, booked through the end of this year. Even so, steel users complain it is becoming more difficult to place DO orders. Thus, the present system of DO priority has about reached its saturation point. This recalls the procurement struggles during the early part of World War II, when too-abundant priorities lost their value, becoming no more than steel hunting licenses.

**Half Slave—Half Free**—This week the steel market is half slave and half free—that is, half of production is slated for defense and essential priority programs and the other half is "free," like the \$64 question, for regular customers to try for. There is no hope that even a majority of consumers will get as much as they want or think they are entitled to. Even manufacturers of consumer durables, who temporarily have saturated their market, are pursuing a policy of aggressive steel procurement. Although some purchasing agents have given lip service to inventory fear, we can find no evidence that they have turned down their regular steel quotas—or any other steel at a reasonable price.

**Unbalanced**—Steel inventories of many consumers are unbalanced as a result of the short-

age. Some manufacturers are working hand to mouth on certain products while they have good stocks of other items. Some have accumulated tonnage that does not fit their requirements, in the hope that they can trade it for something else they need. In other instances, gray market or foreign tonnage has not proven suitable for the purpose for which it was bought.

A closer check on inventories is expected after CMP is functioning and the administrative staff is better organized. Some pell mell manufacturing operations may have been for the purpose of converting inventories into finished products in order to comply with inventory regulations. But this type of correction should be about completed by now.

**Complete Control**—NPA has virtually taken complete control over the use of ferroalloys, including those of manganese, molybdenum, nickel, silicon, tantalum, titanium, vanadium, boron, calcium, chromium, columbium, cobalt and zirconium. Users must file monthly melting schedules 30 days in advance. After going over the schedules, NPA may restrict proposed uses, or even order a different use. The first schedule must be filed May 1, for June melting. A 45-day inventory is also imposed.

**Steel Earnings**—The 1950 financial analysis of the steel industry just completed by THE IRON AGE shows record profits, sales, taxes and dividends. The analysis covers 26 steel producers representing about 92 pct of our ingot capacity. The industry's net earnings were 40.9 pct higher than the previous year. But Federal income taxes showed the biggest gain—103.5 pct. The complete financial analysis appears on page 126.

Steelmaking operations this week are scheduled at 102.5 pct of rated capacity, unchanged from the previous week.

See "Can You Make It?"—new Iron Age subcontracting service on p. 125.



## More than America spent to win its Independence

**T**HE Revolutionary War lasted 8 years and its direct cost was \$74,555,642.

This sum is considerably less than the amount Youngstown is spending on expansion--its share of the steel industry's program to help preserve America's 175-year-old freedom from Communistic attack.

Work on a \$90,000,000 construction project at the Indiana Harbor Works, East Chicago, Indiana, is under way. It includes a 1500-ton blast furnace, 75 new coke ovens and 8-250 ton open hearth furnaces, heating furnaces, a high-lift blooming mill, with 6-3 hole recuperative soaking pits, ore dock extension, unloaders and ore bridge, and a vast array of other facilities needed to produce the addi-

tional 1,000,000 ingot tons of steel involved. By the end of 1952, the steel industry expansion program will raise the total steel producing capacity of the United States to over 117-million ingot tons. This is more steel than is made in all the rest of the world combined.

This tremendous investment by the shareholders of private industry is possible only with adequate profit--profit earned in the past and to be earned in the future. This is a symbol of public confidence--confidence that the American system of free enterprise is right and worth saving. Confidence that it will continue to be our way of life through the years ahead.



## The Youngstown Sheet and Tube Company

General Offices--Youngstown 1, Ohio

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MANUFACTURERS OF CARBON ALLOY AND YOLOY STEELS

The steel industry is using all its resources to produce more steel, but it needs your help and needs it now. Turn in your scrap, through your regular sources, at the earliest possible moment.



*"Because it's so Reliable"*

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**SAFER** — True motor ratings protect you against failure at full capacity loads and speeds. P&H builds the motors with current control of only 110 volts at push button and thermal overload protection.

**LIFETIME CONSTRUCTION** — Precision-built — shaved gears — grease-sealed bearings — moisture, dust and acid-proof.

**HANDLE IT**

*"thru-the-air"*

**AT LOWER COST.**



Here's a good way to get time-saving ideas. Write for your copy of Bulletin H5-1.

**P&H**

**ELECTRIC HOISTS**

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Milwaukee 14, Wisconsin

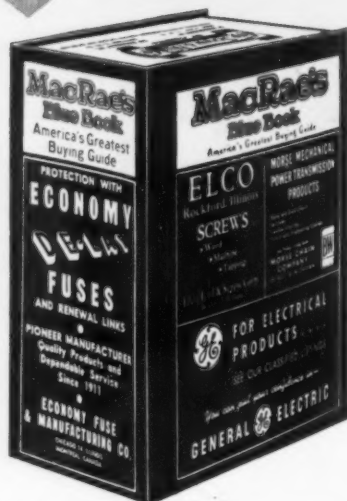
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# SHORTAGES AHEAD



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## MacRAE'S BLUE BOOK

18 East Huron Street  
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ALL in  
ONE BOOK

# Dear EDITOR

letters from readers

## Enlightening Summary

Sir:

Your summary of the trends of the iron and steel industry was most enlightening. I refer to your article appearing in the Mar. 29 issue, p. 15.

I am under the impression that as a result of World War II we learned that ordnance production required less basic materials per productive manhour than ordinary commercial products. It appears to me, therefore, that there is too much material being directed into the preparedness program. As a result of this I believe there will be a lot of material stored in the bins of war production plants, and many people will be walking the streets because the bottom has been scraped by the commercial producing plants.

Of course, I would not be surprised to learn that many fortunate buyers already have their bins filled to take care of their requirements for the next 6 to 12 months, and I also would not be surprised to learn that many producers now realize they have flooded the market and would not mind a slight recession.

It appears that we are going to learn our lessons the hard way again.

R. L. GIEBEL  
President

Giebel, Inc.  
New York

## All For One -

Sir:

We wish to congratulate you on your editorial "All For One, One For All," appearing in the Mar. 22 issue, in which you recognize the need for bringing prime and subcontractors together. We believe the service you are starting will help . . .

We are wondering if you have considered a directory listing in which subcontractors could be listed as to type of production and location, perhaps merely a line or two to each. We would be interested in subscribing to such a service.

L. GUNSETT

D. J. Gunsett Co.  
Van Wert, Ohio

We considered it but found it would be a monumental job.—Ed.

## Fan Mail

Sir:

Your magazine has been found very useful to the Industrial Mobilization

Planning Branch of this office. It has been decided that hereafter the office will subscribe for this document in place of having a subscription placed by an individual.

The outstanding items that we look for in each publication are: (1) Tom Campbell's splendid editorials. These editorials are certainly well worth the price of the magazine. (2) West Coast Progress Reports by R. T. Reinhardt. (3) The Federal View by E. J. Hardy. (4) The data on defense contracts to metalworking industries. This information has proved very valuable to the Planning Branch of this office.

S. C. SANDS  
Industrial Engineer

Corps of Engineers  
U. S. Army  
San Francisco

## Handy Reference

Sir:

In your Mar. 29 issue, p. 142, we note that you have compiled a recapitulation of the ceiling prices of iron and steel scrap.

Since we have need of just such a recapitulation for ready reference by the personnel of our company, we would appreciate about a half dozen copies of this particular page.

A. A. DIAMOND  
Assistant Traffic Manager

Hyman-Michaels Co.  
Chicago

## Trademark Registered

Sir:

Our attention has been called to the article appearing in your Mar. 22 issue, "Russians Have New Heat-Resistant Alloys." We have read this article with much interest and we wish to congratulate you upon the very excellent presentation. It was particularly pertinent reading for us because, as you undoubtedly know, the Driver-Harris Co. manufactures many heat-resistant alloys, including those marketed under the well-known registered trademark "Nichrome."

It is because of this latter alloy that we are writing you at this time. We note that throughout the article our registered trademark "Nichrome" has been freely used without any reference being made to the fact that it is registered and owned by the Driver-Harris Co. It is particularly disturbing to find the phrase "Nichrome type" used in the second paragraph of the article. There is no such thing as "Nichrome type." The alloy is either "Nichrome" or it is not.

We must call your attention to the fact that, according to the interpretation of the U. S. Trademark Laws, a registered trademark cannot be used except by its owner without serious danger of placing the mark in jeopardy.

M. W. CLARK  
Assistant Secretary

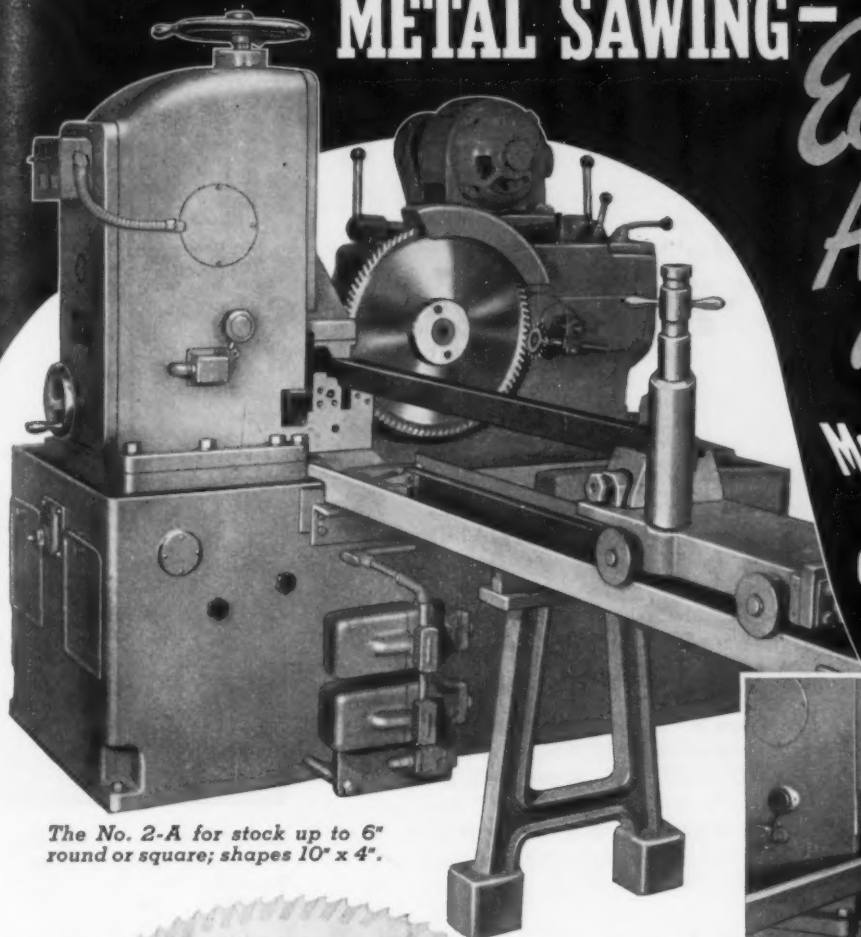
Driver-Harris Co.  
Harrison, N. J.

We apologize for failing to carry a note saying that "Nichrome" is the registered trademark of Driver-Harris Co.—Ed.

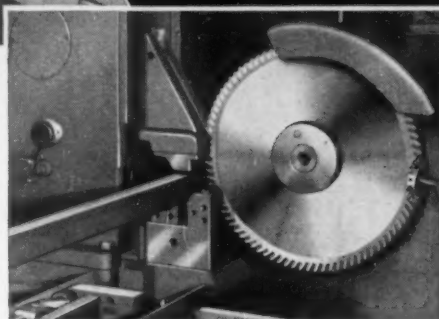
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*Economical,  
Accurate  
and Fast!*

with  
**MOTCH & MERRYWEATHER  
AUTOMATIC  
CIRCULAR SAWING  
MACHINES**



The No. 2-A for stock up to 6" round or square; shapes 10" x 4".



The No. 2-A features simplicity of set-up and no complication when changing from one job to another.

## STUDY THESE CUTTING TIME FIGURES ..



Size ..... 5" O. D. x 1/8" wall  
Material ..... SAE 1020 steel  
Cutting time ..... 28 seconds

★ ★ ★



Size ..... 7" x 3.860" x .450"  
Material ..... Low carbon steel  
Cutting time ..... 30 seconds

★ ★ ★



Size ..... 3" square  
Material ..... C8615 steel  
Cutting time ..... 39 seconds

★ ★ ★



Size ..... 6" diameter  
Material ..... A5135 steel  
Cutting time .. 1 min., 15 seconds

★ ★ ★

Ask our representative to give  
you additional data on the  
circular sawing method.

Round, square or shaped materials are handled with equal ease on Motch and Merryweather circular sawing machines. Ferrous and non-ferrous metals are cut off accurate to length, square, burrless, and with milled finish. Operation is entirely automatic. The "short line" to low-cost production is the circular sawing method — with *Motch & Merryweather* circular sawing machines.

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Builders of Circular Sawing Equipment, Production Milling, Automatic and Special Machines

**PRODUCTION-WITH-ACCURACY MACHINES AND EQUIPMENT**



# IRON AGE

## *introduces*

**Frank Laurens**, elected president of the newly formed **LAURENS BROS., INC.**, Cincinnati. Other officers elected: **N. J. Laurens**, secretary, **Charles Laurens**, treasurer and **O. T. Keller**, vice-president and general manager.

**Max Pressler**, joined **COMMERCIAL METALS CO.**, Dallas, as general manager of the scrap iron division.

**P. G. Houston**, transferred from Columbus, Ohio, to the Buffalo office of **SUMMER & CO.**, as district manager.

**William C. Miller**, appointed plant manager of plant 4 of **Richard Bros. Div., ALLIED PRODUCTS CORP.**, Hillsdale, Mich.

**Fred C. Tanner** succeeds **L. C. Tingley** as president of the **FEDERAL PRODUCTS CORP.**, Providence. Mr. Tingley who has been president of the corporation since its inception has been elected as chairman of the board.

**Robert J. Anderson**, **Edward E. Cazell** and **George R. Goetz**, appointed sales - and - service engineers for **BROOKS CHEMICALS, INC.**, Cleveland.

**John Obrebski**, appointed metallurgist of the **MONARCH MACHINE TOOL CO.**, Sidney, Ohio.

**J. F. Smith**, elected a vice-president of **WHITEHEAD METAL PRODUCTS CO., INC.** Mr. Smith's headquarters will remain in Philadelphia. He is succeeded as manager of the Philadelphia branch by **R. W. Nuffort**.

**Grant A. Colton**, elected president of the **GOLDEN-ANDERSON VALVE SPECIALTY CO.**, Pittsburgh.

**Martin V. Kiebert, Jr.**, appointed business manager of the research laboratories of **BENDIX AVIATION CORP.**, Detroit.

**E. W. McCaskey**, appointed sales manager of **HALAS & KEEFE CO.**, Chicago.

**Robert G. Faverty**, elected a vice-president of **INDEPENDENT PNEUMATIC TOOL CO.**, Aurora, Ill. Mr. Faverty is managing director of **Armstrong Whitworth & Co., Pneumatic Tools, Ltd.**, Thor subsidiary in Newcastle-On-Tyne, England.

**Warren D. Miller**, elected secretary of **CANN & SAUL STEEL CO.**, Royersford, Pa. **Charles R. Todd**, succeeds **Fred H. Nagel** who has retired.

**Jack Clarke**, appointed director of public relations for **TEXAS EASTERN TRANSMISSION CORP.**, Shreveport, La.

**E. M. Joyce**, assigned to the auto tire department, Akron, Ohio, as a staffman for the **GOODYEAR TIRE & RUBBER CO.** Mr. Joyce replaces **Lawrence T. Earley** who has been transferred to the company's manufacturers' sales department, in a senior staff assignment.

**M. K. Schnurr**, appointed executive vice-president of **ROTARY ELECTRIC STEEL CO.**, Detroit.

**Ruth Huston**, elected a director of **LUKENS STEEL CO.**, Coatesville, Pa., to succeed her father, the late **Charles Lukens Huston**.

**Frank L. Early**, appointed branch manager at Dallas for the **BRYANT HEATER DIV.**

Turn to Page 86



**ROBERT LOGIE**, elected president of the **National Roll & Foundry Co.**, Avonmore, Pa.



**H. J. MCGINN**, elected president of the **Eaton Manufacturing Co.**, Massillon, Ohio.



**C. EDGAR SMITH**, elected president of **Towmotor Corp.**, Cleveland.



# IRON AGE

## *salutes*

*Edward J. Hanley*



THE future of the steel industry is in good hands as long as it has people like Ed Hanley in positions of leadership. Ed, 47-year-old president of Allegheny Ludlum Steel Corp., is typical of the newer crop of steel executives who are aware that there is more to their job than producing steel at a profit.

Ed Hanley is a strong promoter of good public and community relations. He not only talks them, he lives them. He realizes that real understanding between company and plant communities can be brought about only by genuine knowledge of each other's problems—and a determination to do something about them.

This comes naturally to Ed. From the time he joined Allegheny Ludlum as secretary in 1936, he has taken an active part in community affairs. He considers this as much a part of his job as production, sales and finance. Besides he likes it.

As a result, Ed Hanley is one of the most approachable executives in the industry. This goes for fellow officers, people in the lower echelons and outsiders, too. People like him for his willingness to consider the opinions of others.

Ed got to the top on ability. He came to Allegheny Ludlum when he was 32 after spending 9 years with General Electric. In 1946 he was elected vice-president in charge of finances; a year later elected a director and in 1949 was named executive vice-president. He became president Jan. 1, 1951.

Ed received his engineering degree from M.I.T. and an M.B.A. from Harvard Business School. He is a native of Whitman, Mass.



MARVIN LEROY LEE, named manager of operations, Halethorpe, Md. for Kaiser Aluminum & Chemical Corp.



ERIC N. DITTIG, elected vice-president assigned to the Pittsburgh office of Luria Steel & Trading Corp.



WILLIAM H. MCKENNA, elected vice-president of Hanlon Gregory Galvanizing Co. Pittsburgh.



PAUL REEVES, appointed director of sales of the Timken Roller Bearing Co., Canton, Ohio.

## IRON AGE *introduces*

*Continued*

Robert T. Eakin, appointed manager of the Brakenridge, Pa., plant of ALLEGHENY LUDLUM STEEL CORP. Mr. Eakin succeeds George Evans, who becomes special consultant to the vice-president in charge of operations.

Orval M. Riggs, appointed manager, application engineering, of the HAYS CORP., Michigan City, Ind.

Carl R. Brick, appointed assistant to the president of BORG-WARNER CORP., and Andrew W. Rose was made assistant general manager of the Warner Gear Div., at Muncie, Ind.

William R. Sturgis, transferred to the sales department of BLOOD BROS. MACHINE CO., Allegan, Mich. Mr. Sturgis will cover the southwest territory.

Joseph T. Holleman, heads the newly opened Chattanooga office of SIGNODE STEEL STRAPPING CO.

Dexter B. Walter, appointed district sales manager, Detroit for FRUE-HAUF TRAILER CO. Others appointed: Fred S. Meumann, Columbus, Ohio, and A. E. Watson, Kansas City, Mo.

Mark W. Cresap, Jr., joins the WESTINGHOUSE ELECTRIC CORP., Pittsburgh, as a vice-president and assistant to the president. Henry R. Michel, appointed assistant to vice-president in charge of purchases and traffic.

O. P. Proudfoot, named manager of the Cleveland district sales office of CUTLER-HAMMER, INC.

George E. Helm, promoted as sales manager of a new district in Baltimore for the ACME STEEL CO. Other key changes: Charles E. Klinck, appointed as Philadelphia district sales manager, succeeding Charles J. Bruneel who enters semi-retirement until completing 33 years of service with the company and Bruce E. Cunningham, assigned to the newly-created position of area special representative, New York City.

E. C. Corson, Jr., appointed credit manager of the San Francisco territory of Federated Metals Div., AMERICAN SMELTING & REFINING CO.

McClure Kelley and Ralph K. Stiles, elected as members of the board of directors of BALDWIN-LIMA-HAMILTON CORP., Philadelphia.

Raymond W. Ferris, named manager of contracts for the shipbuilding division of the BETHLEHEM STEEL CO., Quincy, Mass.

H. B. Conrad, promoted to manager, southwestern division in Kansas City for the DIVERSEY CORP.

George B. Howell, elected chairman of the board of the ELECTRONIC TUBE CORP., Philadelphia. Other officers elected: Henry S. Bamford, president; Theodore T. Toole, vice-president; Matthew H. McCloskey, treasurer; and J. Dress Pannel, secretary.

Charles T. McClelland, appointed advertising and public relations manager of the LOFTUS ENGINEERING CORP., Pittsburgh.

H. D. Palmer, named a director of DETROIT STEEL PRODUCTS CO., Detroit. Mr. Palmer is also vice-president in charge of labor relations.

C. Jared Ingersoll, elected a director of U. S. STEEL CORP., New York, succeeding Walter S. Gifford, who resigned following his appointment as American ambassador to Great Britain.

## OBITUARIES

Franklin R. Hight, plant manager of The Budd Company's Atwater Plant, Miami, Fla.

Simon Myers, 69, one of the largest scrap iron dealers in northeastern Massachusetts, Salem, Mass.

Joseph F. Feig, factory manager of the Chicago division of the United Screw & Bolt Corp., at the age of 74.

R. Lawson, director in charge of Toronto operations and associated with A. C. Leslie & Co., Ltd., for over 30 years, Montreal, Canada.

Harry H. Lumley, retired Chicago district executive of U. S. Steel's American Steel & Wire Company.

Guy A. Moffett, recently appointed assistant manager of engineering of the General Electric Company's control divisions at Schenectady, N. Y. He was 50 years old.

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# *Increase*

**Cold Mill**

**Production with . . . MESTA-THOMSON**

**FLASH WELDERS**



Mesta-Thomson Flash Welder installed in  
a Mesta High-Speed Continuous Pickling Line

**MESTA MACHINE COMPANY**  
**PITTSBURGH, PA.**

*Designers and Builders of Complete Steel Plants*



# on the assembly line

automotive  
news and  
opinions

**Replacement parts schedules hold up . . . Reuther wins out . . . Spare tire rubber for farm equipment.**



*by Walter G. Patton*

**Parts Schedules Hold Up** — Despite increasing materials shortages in the Detroit area, replacement parts schedules are for the most part still holding up. To keep production at high levels some manufacturers are going back to their customers to have them supply the steel, mostly sheets, necessary to fill orders.

Since there has been no restriction on the steel they may purchase, they may be able to pick up material made available by the government's order cutting back steel use for civilian products during the second quarter to 20 pct of the average quarter consumption during 1950.

**Temporary Cutbacks?**—The extent of alloy bar allotment cutbacks received by some replacement parts makers leads them to anticipate production cutbacks within 45 to 60 days. In some cases the cutbacks reach an estimated 50 pct. At most this is expected to be a temporary situation expected to be cleared up when a controlled materials plan goes into effect.

Under CMP, the NPA is planning to protect replacement part production by guaranteeing manufacturers materials at the rate of 112 pct of the amount they purchased during 1950.

**Reuther on Top** — Walter Reu-

ther entered his sixth year as leader of 1,250,000 members of the United Auto Workers Union-CIO last week when he was unanimously reelected president at the convention in Cleveland last week. Also reelected unanimously was Emil Mazey, the union's secretary - treasurer. No nominations were made by the union's anti-Reuther group for the above offices.

The only setback suffered by the Reuther forces in the 19 regional elections was the election of Robert Carter for director of Flint, Region 1-C. His opponent, Reuther-supported Elsworth Patterson, withdrew from the race when it became obvious that Carter would be the victor.

At a pre-convention caucus Carl Stellato, right-wing president of Ford Local 600 UAW, was soundly trounced by Reuther in his attempts to prevent a \$1 increase in union dues. The caucus, attended by more than two-thirds of the convention delegates, overwhelmingly approved the increase.

**For Farm Equipment**—The anticipated elimination of the fifth tire on new automobiles by the National Production Authority was put into effect last week after most automobile manufacturers had already adopted the practice. Tire manufacturers must put the rubber

saved under the order into the production of tires for farm equipment, trucks, trailers and tractors.

The order limits tire inventories of auto makers to 15 days while permitting wholesalers and tire dealers 30 day inventories. This action is intended to prevent hoarding and price gouging on new tires. At present white wall tires are almost non-existent and standard-sized tires are becoming scarce quickly.

**Debut of "Consul"** — A new British-built, small car will be placed on the American market this summer by the Ford Motor Co. Called the "Consul," this 100-in. wheelbase car has an overall length of 162 in., width of 64 in., and height of 61 in. It is powered by a four-cylinder engine of 92 cu in. cylinder displacement.

An unusual new feature is a hydraulically assisted clutch mechanism which relieves the driver of most of the effort involved in clutching and declutching footwork. At first, it will be made available through 100 Ford and Lincoln-Mercury dealers. It is expected to retail in the \$1700-\$1800 price range.

**Signs of Softening**—While still showing some optimism, the used-car market continues to show signs of softening. Although heading into the heavy selling season used car

# assembly line

Continued

buyers are not rushing into the market as would be expected at this time. Prices remain at levels considerably below ceiling and only lower priced cars seem to be moving in any quantity. Dealer stocks remain high and prices continue to dip slightly.

**Quandary in Rubber** — In a statement before the Select Committee for Small Business, P. W. Litchfield, chairman of the board of Goodyear Tire & Rubber Co., outlined recommendations he thought would avert an industrial and transportation crisis due to current rubber shortages.

He suggested that the government do away with rubber allocations as soon as possible and adhere to the base period method of rubber allocation. Furthermore, the government should release 10,000 tons of dry rubber for civilian use during May and June. He also suggested that another look be taken at military stockpile rates of acquisition to see if they can be reduced without jeopardizing the national security. Finally, he recommended an increase in synthetic rubber production.

**Loan for Engine Program**—Continental Motors Corp. is arranging with a group of banks for a \$30 million loan to finance its rapidly increasing military engine program. Because its production of military engines started in 1949 and is now at an advanced state, it requires larger working capital to finance tooling and inventories. Continental is the first major company to announce such a credit arrangement in the present emergency.

It is the only company currently in production on the 810-hp tank engine although another manufacturer is scheduled to produce it at a later date. Orders have also been received for a second engine model to power another type of tank.

**Automatic Transmissions** — One out of every three cars built last year were equipped with automatic

transmissions, according to Ward's Automotive Yearbook issued recently. This is the highest number in the history of the industry. Buick led the field with 439,903 Dynaflo devices in its 1950 models. It was followed by Oldsmobile, Pontiac and Chevrolet in that order. Total production of automatic or semi-automatic drives during 1950 totaled 2,211,918 units.

**Explains OPS Rules**—In order to guide dealers through many problems and difficulties arising from OPS regulations, the National Automobile Dealers Assn. has recently compiled a list of interpretations and explanations of current OPS regulations covering the sale of new and used cars, trucks, accessories and services.

It has submitted them to OPS for final checking and official interpretations. When finally checked by OPS officials, they should prove a worthwhile tool for dealers and remove much of the present confusion resulting from pricing regulations.

**Double Wasp Engines**—A U. S. Air Force contract to build large quantities of Pratt & Whitney R-2800 "Double-Wasp" aircraft en-

gines has been received by Nash-Kelvinator Corp. The engines will be assembled in Kenosha, Wis., and tested in facilities built there for World War II production.

The new aircraft engine program is not expected to impair production of automobiles and appliances, the volume of which will depend on government material restrictions.

**March Production**—March production of General Motors' cars totaled 249,962 while truck output reached 56,286 units. Although higher than the previous month, production fell below that of the same month last year. During the entire third quarter GM produced 827,722 cars and trucks, a slight drop from the first 3 months of 1950 when 834,982 vehicles were produced.

**Opening Plans Vague** — Plans for a formal opening of the General Motors Technical Center remain indefinite with the earliest possible date set around July. So far the only unit out there in force is the products study group. The research group is the next one expected to follow them to the new quarters.

## THE BULL OF THE WOODS

By J. R. Williams



# Six hours saved on every 100 parts



## MULTIPRESS®

**cuts costs of trimming castings  
at the Hoover Company plant**

Every 18 seconds, with a single stroke of the ram, this 25-ton Multipress does a complete job of trimming flash from a streamlined cast-aluminum housing for one of the famous Hoover electric cleaners.

The job previously required four separate operations, two of which were done by hand, using files and grinding wheels. The records show that the Multipress method saves *six hours* for every hundred cleaner units turned out.



For maximum safety, the press is controlled through dual levers that keep the operator's hands out of the way of the moving ram. With operating hazards removed, worker morale is higher and time-wasting safety precautions are unnecessary.

It has also been found that the trimmed housings are more uniformly high in quality—and no special training or skill is required of the operator.

Gains like these are the usual thing where Multipress is adapted to today's needs for faster production, lower scrap losses, fewer rejects, safer operation, and better results. That's because Multipress incorporates advanced engineering that adapts the smooth, accurate *power control* of oil-hydraulic energy to new high levels of production efficiency. Write for full details.



Multipress is tailored to individual needs, in eight frame sizes, for bench or floor installations, with capacities from one to fifty tons. Index-table feeds, a harmonic stock feed for continuous metal strip, and pelleting equipment are some of the many standard Multipress accessories available for special needs.

**The DENISON Engineering Company**  
1158 Dublin Road Columbus 16, Ohio

**DENISON**  
*Hydraulics*



# west coast progress report

*digest of  
far west  
industrial  
activity*

*by R.T.Reinhardt*



**More and More Steel**—Eight of nine western producers of rolled steel products, representing 99 pct of West Coast ingot capacity, last year turned out 2,978,000 tons, 601,000 tons more than in 1949 and 325,000 tons above 1948, according to a survey by THE IRON AGE.

Estimated production of rolled products in 1951 is 3,340,000 or an increase of 362,000 tons. A similar forecast made by THE IRON AGE for 1950, published Jan. 19, 1950, fell 168,000 tons short of actual production.

PRODUCTION OF ROLLED STEEL		
	Actual 1950	Est. 1951
Plate .....	1,123,000	1,062,000
Strip .....	61,000	77,000
Sheet and Tinplate ....	546,000	630,000
Standard Pipe .....	113,000*	157,000*
Structural Shapes ....	235,000	309,000
H-R Bars and		
Small Shapes .....	672,000	783,000
Wire Rods, Wire		
Products .....	207,000	252,000
Miscellaneous .....	21,000	70,000
Totals .....	2,978,000	3,340,000
Ingot Production ...	4,054,000	4,462,000

\*Includes pipe produced by steel mills only and does not include pipe fabricated by Consolidated Western Steel Corp. or Basalt Rock Co.

**It All Helps**—In time of normal steel supply the unloading of 7500 tons of sheets, shapes and pipe from Bethlehem's Sparrows Point plant would hardly be newsworthy, but in Los Angeles last week the trade considered it an event of note.

**Signs of the Times**—Defense industries in the Pacific Northwest report a marked increase in labor turnover. May be a reversal of the feeling that a defense job is a good thing to have in event of all-out war or, more likely, a more widespread complacency as the Korean situation improves. Some shops report having to hire three men to make a net gain of one.

Boeing Airplane Co. employment in Seattle has reached a postwar high of 26,163—an increase of 8150 since June.

**Subcontractors Used**—Prime contractors in the Seattle area are finding that machine shops and other metalworking plants outside of their normal trade area can supply components competitively or at lower cost than local producers.

In the face of that, employers there are faced with another stiff increase in costs. Last week more than 1000 workers in metal shops were on strike even though they had been granted a 10 pct wage increase. "Fringe" issues are still to be settled.

**Production Lags**—Airframe producers in southern California are being held up as tool and die departments sweat to complete tooling before they can get under way on a large scale of their share of important plane contracts.

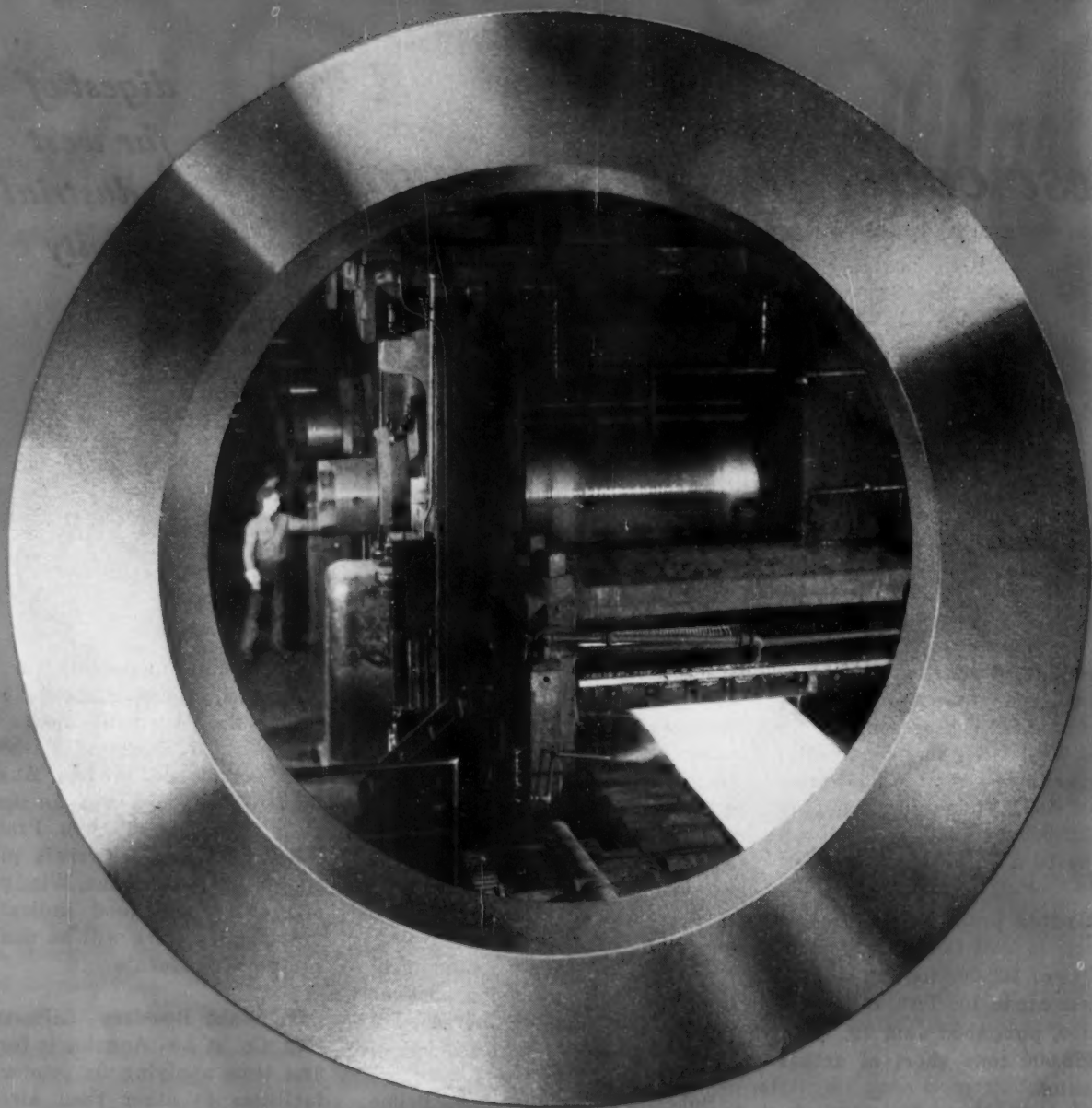
Automobile assembly in the West has been cut about 25 pct during the past month because of the material shortage. Nash Motors announced in Los Angeles that it will turn out an undisclosed number of twin Pratt & Whitney 2800 hp aircraft piston engines in its Kenosha, Wis., plant and there are good indications that similar work will be done in southern California.

**To Make Boosters**—AiResearch Mfg. Co. at Los Angeles is for the first time applying its production facilities to other than aircraft products.

The company has received a half million dollar contract for 50-caliber ammunition boosters for Army tanks. These aluminum boosters are powered by small, high-speed electric motors.

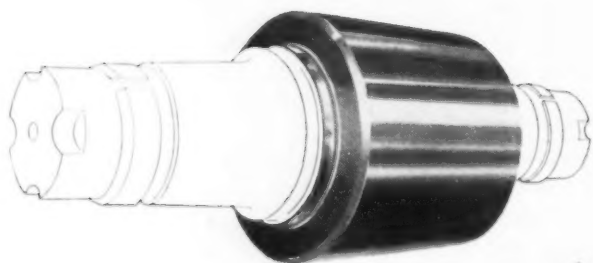
**Sound Waves Ineffective**—Ultrasonic emission arresters have been ruled out as impractical to control smog contributing factors from cupolas and openhearths in Los Angeles County. Operators are turning to baghouse and electrostatic equipment as a solution to their problems.

**More Brick**—Production of silica refractory brick will be increased 25 pct by Murray Refractories Co. at its Salt Lake City plant. An expansion costing \$170,000 will soon get under way.



Custom-built to roll more tons . . .

## Heppenstall Sleeves



Don't scrap worn rolls—re-sleeve them!



**Heppenstall**

—the most dependable name in forgings

Heppenstall back-up roll sleeves roll record tonnages . . . last longer in high speed service because their design permits more effective forging and heat treating operations.

Made from Heppenstall's own steels, each sleeve is mandrel forged—worked thoroughly to produce maximum density and grain refinement. With careful heat treating, the working surface of every sleeve is tempered to meet exact hardness specifications. Heppenstall also makes forged arbors . . . has facilities to grind arbors and sleeves for perfect shrink fitting. Heppenstall Company, Pittsburgh 1, Pa. Sales offices in principal cities.

# *the federal view*

*this week in  
washington*

*by Eugene J. Hardy*



**Ban on Hoarding**—Critical and strategic materials in possession of the military departments are now under a consolidated policy established by the Secretary of Defense. It prohibits any form of hoarding of materials that are critical or expected to become critical. It requires the maximum use of alternates even when critical materials are available. All equipment is to be repaired where possible instead of being replaced. Unserviceable material is to be disposed of.

Usable excess quantities are to be reported to the Surplus Materials Div., Bureau of Supplies and Accounts, Dept. of the Navy, which is the central redistributor of materials within the Dept. of Defense. The material which is excess to the needs of all the services will be reported and held for disposition under the stockpiling program of the Munitions Board.

**Work for Small Shops**—Small machine shops and rebuilders will be used, wherever possible, to repair and recondition machine tools under a new policy agreed to by the Army, Navy and Air Force.

Many machine tools being withdrawn from the National Equipment Reserve require extensive rebuilding and rehabilitation to place them in proper working condition. Prime contracts are also encouraged to follow the same

policy whenever they have defective machine tools which are in need of repair.

**Don't Appeal to Military**—The Munitions Board has told the Army, Navy and Air Force that it is not the job of the services to assist defense contractors in obtaining raw materials, but that contractors should be referred to field offices of NPA.

This procedure, outlined in the Board's Directive 6, explains that the services have no control over the flow of materials which is the job of NPA.

"Though the services are interested in timely delivery," says the Directive, "they will assist contractors only when they have exhausted their own ingenuity and resources."

**Holds Cuts in Excise Items**—The House Ways and Means Committee doesn't want NPA to order any further cuts in production of items subject to excise taxes (tires, autos, appliances, etc.) unless Treasury Secretary Snyder is consulted concerning possible loss of Federal revenue.

In a resolution calling for such consultation, the Committee pointed out that the cut in tin for beer cans could mean substantial loss in excise taxes, since much of the beer sold in the country is sold in cans.

**More Trouble on Write-Offs**—Amid all the furor about hasty granting of "certificates of necessity" for fast tax write-offs, the House Appropriations Committee raises another headache for firms holding such certificates. Advising the control agencies to go slow in granting certificates, the Committee further warns that some provision must be made so the Government can collect taxes on plants that continue in civilian production beyond the 5-year fast amortization period.

**Freight Cars**—Including March output of 7029 units, first quarter production of new freight cars amounts to approximately 19,000, according to Defense Transport Administration.

About 90 pct of these is believed by DTA to have been produced from free steel. Apparently only about 10 pct of the quarter's special steel allocations has reached the assembly stage, but it is expected to show up in quantity in April.

Nor has much of the 420,000 tons of steel allocated for car repair during the first quarter been used for the purpose, DTA figures indicate. However, as of Mar. 1, the number of serviceable cars in operation by class 1 railroads were reported at 1,636,000 units—an increase of 33,000 from '49.





# TM CHAIN for Every Application

***Ryerson for Prompt Shipment***

When you need chain for towing, bundling, hoisting—any application, it will pay you to call Ryerson Steel. Here you can be sure of getting a rugged, dependable product because Ryerson carries only "Taylor Made" chain—famous for high quality since 1873.

Every type of "Taylor Made" chain can be shipped on short notice, including: Common coil chain, straight link chain, BB coil, high-strength TM alloy steel chain (see below), and many others. Hooks, rings and other chain accessories are also available from Ryerson.

All are carefully produced—thoroughly tested and inspected. So for safety and durability on chain jobs, quick service on chain orders, call Ryerson for "Taylor Made" chain.

## **5 to 15 Times Longer Life with TM Alloy Steel Slings**

Where work is heavy many shops have found that "Taylor Made" alloy chain slings give greater safety, longer life. One reason: the tensile strength of TM alloy chain (125-135,000 lbs. after heat treatment) is almost three times that of dredge iron chain. Another: The stubby,

narrow links of TM slings are ideal for use around sharp corners—reduce gouging and deforming to a minimum. Still another: It has twice the safe working load of low carbon or wrought iron chain. Every link is carefully tested and inspected. Write for complete data.

# RYERSON STEEL

JOSEPH T. RYERSON & SON, INC. PLANTS AT: NEW YORK • BOSTON • PHILADELPHIA • DETROIT • CINCINNATI  
CLEVELAND • PITTSBURGH • BUFFALO • CHICAGO • MILWAUKEE • ST. LOUIS • LOS ANGELES • SAN FRANCISCO

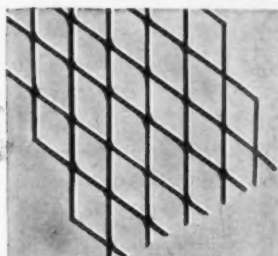
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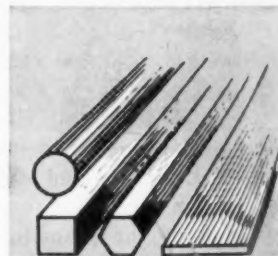
**WIRE ROPE**



**FORGINGS**



**EXPANDED METAL**



**TOOL STEEL, DRILL ROD**



**BABBITT METAL**

Six tool steels were deliberately spoiled, either by quenching in the wrong medium or at incorrect temperatures. Some attained desired hardness values and bend strengths after reheating and retempering. Some of the basic technique and required precautions are given.

## SPOILED TOOL STEELS

CAN BE

# RECLAIMED



By R. P. Seelig

Hartsdale, N. Y.

When the heat treater is faced with the decision whether to discard work that has been overtempered or try to re-harden it, he finds no satisfaction in published literature. One of the few references to the subject was found in an article by Payson.<sup>1</sup> In connection with high-speed steel, an intermediate anneal is recommended in order to avoid grain coarsening.

Some of the rehardening work to be described was purposely spoiled by overtempering. In order to prevent this from happening in practice, the heat treater may be tempted to undertemper the work, determine the hardness, then retemper in case the hardness is really high. There may be a question as to how a tool steel would react to repeated temperings. The experiments described here were carried out in the laboratory of B & S Metallurgical Service and provide an indication of what may be expected when rehardening and retempering some types of tool steels.

Six types of steels were involved in the experiments:

*Steel A* was an oil hardening tungsten tool steel of the nominal composition: 0.5 pct C, 2.0 pct W, 1.3 pct Cr, 0.85 pct Si, 0.25 pct V. This steel is intended for applications where shock resistance is more important than maximum hardness.

*Steel B* was a water hardening, carbon-vanadium tool steel of the nominal composition: 0.9 pct C, 0.3 pct Mn, 0.25 pct Si, 0.25 pct V. This steel is designed for applications where good surface hardness in combination with a tough core, is desirable.

*Steel C* was an air hardening high-carbon, high-chrome tool steel of the nominal composition: 1.55 pct C, 12.00 pct Cr, 0.8 pct Mo, 0.3 pct Mn, 0.3 pct Si, 0.25 pct V. This steel is used where dimensional stability, through-hardening and abrasion resistance, are the prime requisites.

*Steel D* was an air hardening medium chrome steel of the nominal composition: 1.0 pct C, 5.0

## Spoiled tools (continued)

pct Cr, 0.25 pct V, 1.00 pct Mo. This steel is recommended where low distortion is essential and toughness is also desired.

*Steel E* was an oil hardening chrome-nickel steel of the nominal composition: 0.75 pct C, 0.35 pct Mn, 0.25 pct Si, 1.0 pct Cr, 1.75 pct Ni. This steel is similar to Steel D, but with superior toughness.

*Steel F* was an air hardening manganese-chrome steel of the nominal composition: 0.7 pct C, 2.00 pct Mn, 0.3 pct Si, 1.00 pct Cr, 1.35 pct Mo. This steel is outstanding in applications where deep hardening is essential and where toughness and close dimensional control are important.

## Light Carburizing Aids

Preliminary experiments were carried out with Steel A. According to the mill's literature, the as-oil quenched hardness should be 56 to 58 Rc. When quenching from a neutral atmosphere (which was completely non-decarburizing for steels C and D) as-quenched values of only 54 Rc average were found. By maintaining a slightly carburizing atmosphere in the furnace, hardness values of 60 Rc and over were consistently obtained. This technique is successful whether low hardness was due to quenching from too low a temperature or over-tempering. The austenitizing temperature, unless otherwise indicated, was 1725°F. The specimens, 9/16 in. in diam by about 1 in. long, were oil quenched and the average growth was about 0.2 pct.

Steel A was reheated in a neutral atmosphere and oil quenched for a second time, after once having been properly heat treated. The hardness, on an average, came to only 4 points below the original hardness. The hardness can be raised over the first value by under-hardening the first time. This is done either by air cooling instead of oil quenching or by removing the specimen from the quench before transformation is completed.

Rehardening by proper heat treatment follows. The hardness normally expected by the single treatment is not reached with this process. The same behavior is found whether or not an intermediate anneal at 1475°F is used between hardenings. Examples showing this behavior are described in Table I.

The fact was mentioned that much better hardness readings were obtained when quenching this steel from a slightly carburizing furnace atmosphere. By using this technique, very satisfactory hardness after re-hardening can be obtained. (Table II)

The effect of the atmosphere became noticeable also in rehardening experiments with water-hardening Steel B. Specimens were purposely underhardened by quenching either in oil or air. They were then annealed at 1425°F and rehard-

TABLE I

## BEHAVIOR OF STEEL A—NEUTRAL ATMOSPHERE

Specimen No.	Treatment	Change in Diam, in.*	Hardness, Rc
67	Normally hardened by oil quenching from 1725°F. Annealed at 1475°F. Rehardened by repeating oil quenching from 1725°F.	+0.0011 +0.0010	57 53.5
68	Faulty hardening by heating to 1725°F and incomplete oil quench. Annealed at 1475°F. Rehardened by normal oil quenching from 1725°F.	-0.0006 +0.0003	40 56.5
69	Faulty hardening by heating to 1725°F and air quenching. Annealed at 1475°F. Rehardened by normal oil quenching from 1725°F.	-0.0005 +0.0002	40 54

\* Always compared with the original diameter as-delivered in the annealed and ground condition.

TABLE II

## BEHAVIOR OF STEEL A—CARBURIZING ATMOSPHERE

Specimen No.	Treatment	Change in Diam, in.*	Hardness, Rc
73	Normally hardened by oil quenching from 1725°F in neutral atmosphere. Annealed at 1475°F. Rehardened by normal oil quench from 1725°F in carburizing atmosphere.	+0.0010 +0.0016	57.5 65
59	Faulty hardening by allowing specimen to cool to approximately 1450°F before oil quenching. Annealed at 1475°F. Rehardened by normal oil quench from 1725°F in carburizing atmosphere.	+0.0011 +0.0012	52 63

\* Always compared with the original diameter as-delivered in the annealed and ground condition.

TABLE III

## REHARDENING BEHAVIOR—STEEL C

Specimen No.	Treatment	Change in Diam, in.*	Hardness, Rc
122	Control specimens, normally hardened from 1800°F in neutral atmosphere and air quenching.	+0.0002	63
124	Control specimens, normally hardened from 1800°F in neutral atmosphere and air quenching.	+0.0002	63
104 a	Hardened as above, sub-cooled at -100°F.	+0.0013	64
b	Tempered at 350°F in oil bath.	+0.0011	62
c	Annealed at 1600°F, furnace cooled.	+0.0006	61
d	Rehardened from 1800°F and air quenched.	+0.0007	62
92 a	Hardened as control specimens.	+0.0002	63
b	Tempered at 350°F in oil bath.	—	61
c	Over-tempered at 1000°F, furnace cooled.	+0.0007	62
d	Rehardened from 1800°F and air quenched.	+0.0008	63
84 a	Hardened as above, sub-cooled at -100°F.	+0.0017	64
b	Tempered at 350°F in oil bath.	+0.0011	62
c	Over-tempered at 1000°F, furnace cooled.	+0.0007	61
d	Annealed at 1775°F, furnace cooled.	+0.0005	63
e	Rehardened from 1800°F and air quenched.	+0.0008	62

\* Always compared with the original diameter as-delivered in the annealed and ground condition.



ened by water quenching from 1500°F in a slightly carburizing atmosphere. Oil quenching resulted in a hardness of 59 RC, air hardening 23 RC. After rehardening as described, the maximum hardness to be expected in this steel, 63 to 65 RC, was attained. This steel is sensitive and develops soft spots easily. It is impossible to predict the hardness resulting after tempering or retempering very accurately.

After proper air hardening, subcooling,<sup>2</sup> tempering, annealing and rehardening, high-carbon, high-chrome Steel C comes back to almost the same hardness as after the first quenching. When purposely ruining a good specimen by overtempering at 1000°F and then rehardening with or without intermediate annealing, full hardness is again reached. The cycles used and results obtained are shown in detail in Table III. All specimens were smooth and free from scale and soft spots after all treatments. Linear growth is 0.1 pct or less in all cases.

#### Low-chrome Experiments Less Successful

Experiments with a lower chromium grade of air hardening steel (Steel D) were not as successful. While regular air hardening from 1800°F or 1825°F resulted in hardnesses of 62 to 63 RC, these values were not regained when specimens whose hardness was impaired were rehardened. For instance, pieces which were overtempered at 1000°, and had their hardness reduced to 50 RC, were rehardened by the identical procedure as that used the first time. The new hardness values were about 4 points lower.

If an intermediate anneal at 1600°F was used before rehardening, the hardness loss was 6 points. With an anneal at 1775°F and furnace cooling prior to re-austenitizing at 1800°F, and air quenching a second time, the average hardness was approximately 53 RC. All this work was done in neutral atmosphere. No attempt was made to offset the loss of hardness by carburizing the surface during the second heat treatment.

After the general rehardening behavior pattern shown by hardness values became apparent,

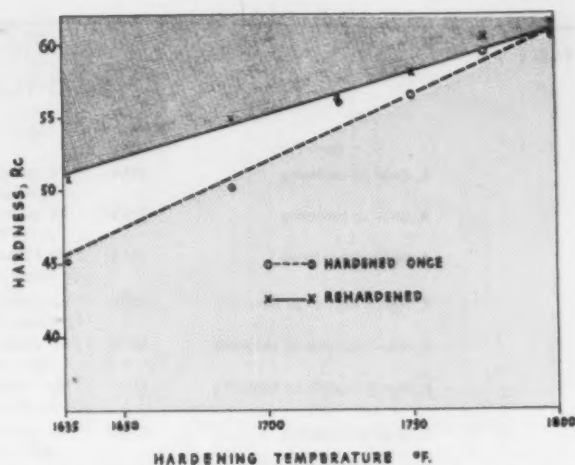


FIG. 1—Effects of rehardening high-carbon, high-chrome Steel C at lower austenitizing temperatures.

it seemed of interest to determine what the result of repeated hardening might be. The two air hardening Steels C and D were selected for this purpose. The specimens were divided into two groups; one was rehardened 5 times without intervening anneals. The other group did have such intervening treatments.

Examples of both groups are shown in Table IV. The samples, fully annealed and ground as received, were approximately 1 in. long and 0.7609 in. diam for the high-carbon, high-chrome Steel C, and 0.5148 in. diam for medium-chrome Steel D.

#### Bend Tests Indicate Differences

Six specimens which had been hardened properly, previously, were rehardened at various lower temperatures. At the same time, new specimens as-delivered were hardened for the first time at these lower temperatures. The results in terms of Rockwell "C" hardness are plotted in Fig. 1.

In order to learn something of how strength and ductility are affected by rehardening, bend tests were performed. Two steels from the previous series, one oil and one air hardening, were used. In addition, oil hardening chrome-nickel

TABLE IV

#### EFFECTS OF REPEATED REHARDENINGS—STEELS C, D

Steel	Rehardening Without Intermediate Annealing				Rehardening With Intermediate Annealing			
	C 92		D 93		C 94		D 95	
	Hardness, Rc	Size Change, in.*	Hardness, Rc	Size Change, in.*	Hardness, Rc	Size Change, in.*	Hardness, Rc	Size Change, in.*
As air quenched from 1825°F	63	+0.0002	63	+0.0008	—	—	—	—
Subcooled at -100°F	—	—	—	—	64	+0.0017	63	+0.0019
As tempered at 1000°F	52	+0.0007	49	+0.0010	61	+0.0007	52	+0.0006
Annealed 1775°F	—	—	—	—	18	+0.0005	32	+0.0005
First rehardening	63	+0.0006	59	+0.0013	62	+0.0008	53	+0.0015
Second rehardening	62	+0.0004	58	+0.0008	61	+0.0008	51	+0.0007
Third rehardening	61	+0.0007	57	+0.0002	61	+0.0009	54	+0.0006
Fourth rehardening	62	+0.0004	57	+0.0001	61	+0.0009	53	+0.0003
Fifth rehardening	62	+0.0010	57	+0.0001	61	+0.0009	53	+0.0002

\* Always compared with the original diameter as-delivered in the annealed and ground condition.

TABLE V

## BEND TEST RESULTS

Steel Type	Specimen No.	Treatment	Hardness, Rc	Bend Strength psi
A, Cr-W oil hardening	187/8	Oil quenched from 1725°F, tempered at 425°F (Control)	51	620,000
A, Cr-W oil hardening	188/90	Oil quenched from 1725°F over-tempered at 750°F, rehardened and tempered 425°F	47	600,000
A, Cr-W oil hardening	191/2	Heat treated as above, subcooled after rehardening tempered at 425°F	47	610,000
C, High C high-Cr air hardening	193/4	Air cooled from 1850°F, tempered at 425°F (Control)	61	490,000
C, High-C high-Cr air hardening	195/6	Air cooled from 1850°F, over-tempered at 750°F, rehardened and tempered at 425°F	61	480,000
C, High C high-Cr air hardening	197/8	Heat treated as above, subcooled after rehardening tempered at 425°F	62	430,000
E, Cr-Ni oil hardening	175/6	Oil quenched from 1550°F, tempered at 325°F (Control)	60	820,000
E, Cr-Ni oil hardening	177/8	Oil quenched from 1550°F, over-tempered at 750°F, rehardened and tempered at 325°F	60	490,000
E, Cr-Ni oil hardening	179/80	Heat treated as above, subcooled after rehardening and tempered at 325°F	61	360,000
F, Mn-Cr air hardening	181/2	Air cooled from 1850°F, tempered at 325°F (Control)	59	430,000
F, Mn-Cr air hardening	183/4	Air quenched from 1850°F over-tempered at 750°F rehardened and tempered at 325°F	58	460,000
F, Mn-Cr air hardening	185/8	Heat treated as above, subcooled after rehardening and tempered at 325°F	61	380,000

Steel E and air-hardening manganese-chrome Steel F were included in this group.

For each steel, control specimens were hardened and tempered according to standard practice. The next set was then quenched, over-tempered and rehardened. The third set was subcooled at  $-100^{\circ}\text{F}$  after rehardening in an effort to regain as much hardness as possible. The bend test was carried out in a standard transverse rupture fixture.<sup>3</sup>

All specimens were tested in the as-tempered condition, while the above recorded hardness and size change values were measured on as-quenched work.

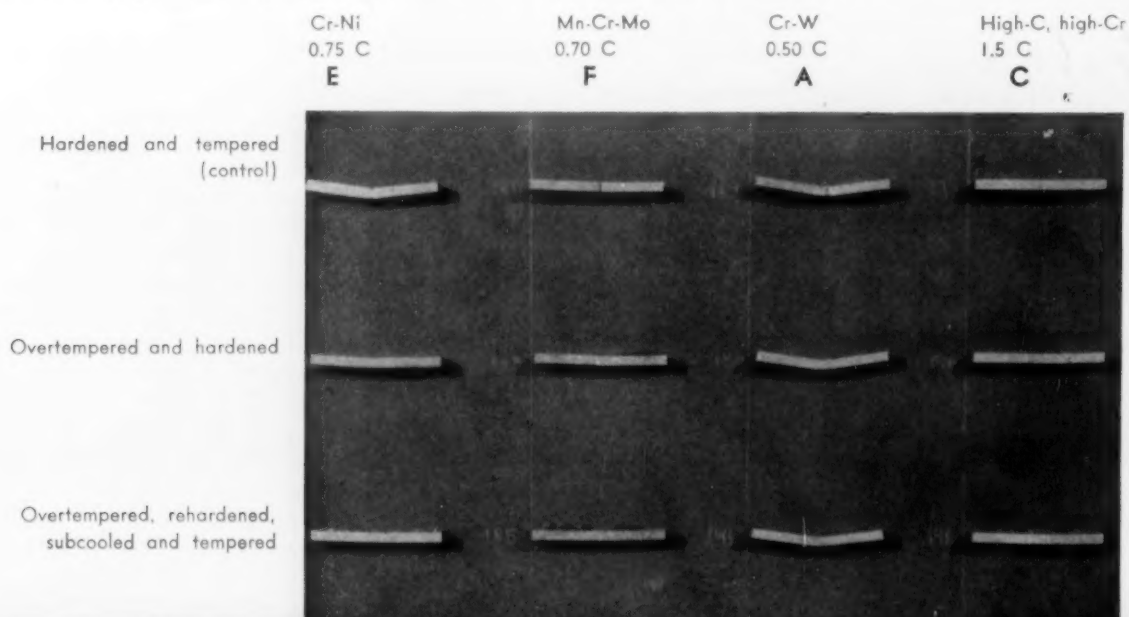
The ductility could not be measured with available facilities. But a qualitative indication was obtained by joining the two halves of the

broken specimens with the fractured surfaces matching. It was easy to distinguish between varying amounts of plastic deformation which had taken place prior to rupture. This is shown pictorially in Fig. 2, using one specimen from each group.

Considering the results in Table V and in Fig. 2, it can be seen that Steel A behaved very well in rehardening, if strength and toughness are important. Hardness was very poor as reported earlier.

Steel E behaved like Steel C in hardness. The loss in strength by rehardening was notable. The combination of toughness, high strength and good hardness is quite remarkable after standard heat treatment. This advantage was lost on rehardening. The reduction in strength is serious.

FIG. 2—Due to the lack of ductility-measuring facilities, only qualitative indications of this property could be obtained. Halves of broken specimens joined with their fractured surfaces carefully matched. It was then possible to distinguish between the varying amounts of plastic deformation that had taken place prior to rupture.



If a tool was tempered at too low a temperature in an effort to avoid loss of hardness, it may be desired to temper it a second time. There is a question of selecting the proper temperature for second treatment. Also, one may wonder whether the loss of hardness from re-heating to a temperature higher than the first temper will be the same as if the first temper had been carried out at this same higher temperature.

A series of tests were carried out to clarify this point. A group of specimens of four different tool steels were hardened and then tempered and retempered successively at increased temperatures. With each tempering treatment a freshly hardened set of samples was included as control specimens.

Not all control specimens were hardened to the exact same hardness; some of them had to be used in the as-tempered condition. Therefore, the hardness at the start of the experiment is also shown in the chart. The original hardness has, of course, a bearing on the hardness reading after a given tempering treatment.

The retempering results are summarized in the four bar charts shown in Fig. 3. In each instance, the narrow columns 1, 3, 6, 9 and 12 represent the hardness of new material serving as control specimens. The wide columns 2, 4, 7, 10 and 13 next to these are the same specimens after the tempering treatment and the second wide columns 5, 8, 11 and 14 are the retempered specimens. For better identification, specimen numbers are also given. They show how the first specimen recurs for each tempering treatment.

### Steel C Termed Relatively Foolproof

The austenitizing temperature for Steel C cannot be reduced far below the specified range (1800°F) without a sacrifice in hardening. For new material the loss in hardness is much greater than in rehardening (Fig. 1). Thus, if it is necessary to reharden a steel of this type, the quenching temperature may be selected at the lowest point of the customary range, even though this temperature would be unsatisfactory for a new tool. In this way, grain growth may be avoided to some extent.

The strength of this steel as determined by the bend test is also fully restored after rehardening and only very slightly impaired by subcooling which raises the hardness somewhat. No ductility can be expected in this material which is distinguished by high hardness and wear resistance.

Very consistent behavior in tempering is also a feature of this steel. If it should be necessary to retemper it, such as in a case where the user has changed his mind about the desired hardness, this can be done and the final hardness predicted without difficulty.

The medium-chromium, air-hardening Steel D requires more care and cannot be called as foolproof as Steel C. The hardness deteriorates

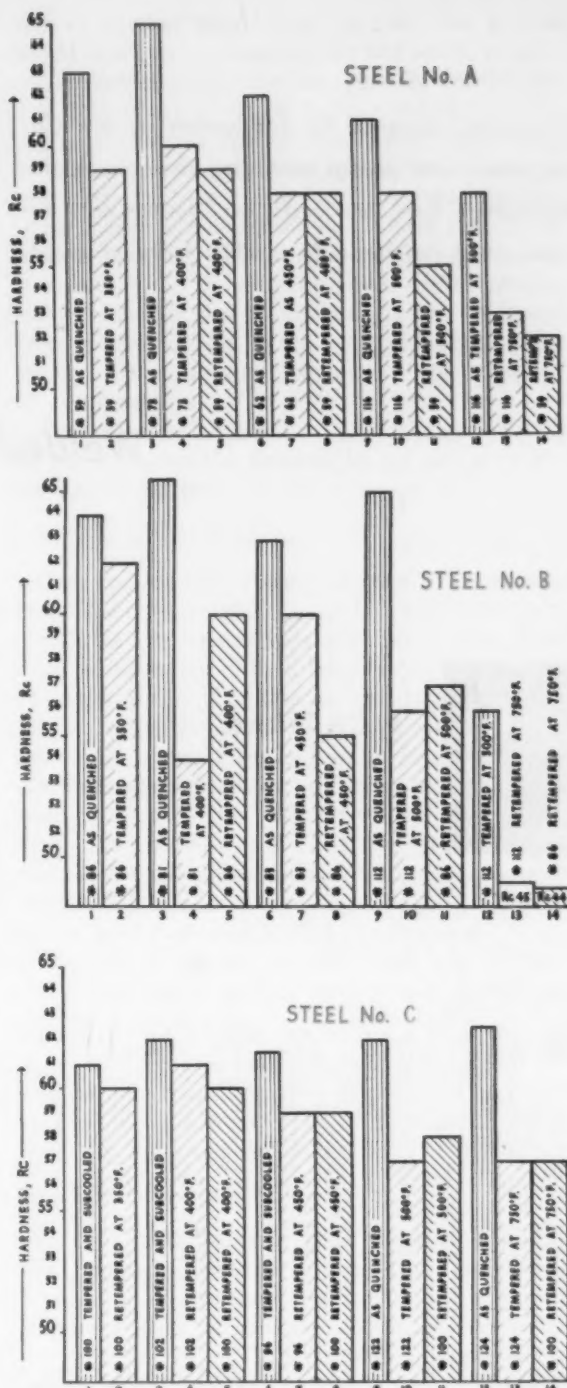


FIG. 3—Effects of repeated retempering at successively higher temperatures on each of the three tool steels studied.

with repeated rehardening, and more so if intermediate annealing is used. Retempering does not present any difficulties. It may be well to temper this steel at the low point of the customary range. If it remains too hard, it can be redrawn with an accurately predictable final hardness.

### References

- 1 P. Payson, "Heat Treatment of Tool and Die Steels," *Machinery*, Jan. 1949, p. 163
- 2 R. P. Seelig, "Heat Treatment of Tool Steels by Martempering," *THE IRON AGE*, Sept. 1, p. 72, Vol. 164, No. 9, 1949.
- 3 T. H. Gray, "Bend Test for Hard and Brittle Metals," *Metal Handbook*, ASM, 1948 Edition.



A crusher, designed for fabrication by arcwelding, shows total savings averaging 50 pct in weight, fabrication time, and costs, over former cast designs. And resistance to shock is twice as great.

## Welded crusher is LIGHTER CHEAPER STRONGER



**By C. G. Herbruck**

*Assistant Secretary  
James F. Lincoln Arc Welding Foundation  
Cleveland*

**R**edesign of a single roll crusher for arcwelded fabrication produced total savings in weight, time and costs which averaged nearly 50 pct and which ran as high as 70 pct on at least one major component. Total shock resistance of the new design is more than twice as great as that of previous cast designs.

The machine is used to crush coal, rock and shale, and hard clay. Strength, rigidity and long life are principal requirements in designing a crusher which necessarily leads a rugged and demanding operating life.

Basically, the design of the machine is simple, calling for only one essential moving part. This is a cylinder or rotor on which are mounted toothed segments to crush the materials fed into the machine against a stationary breaker plate.

### **New Unit All Welded**

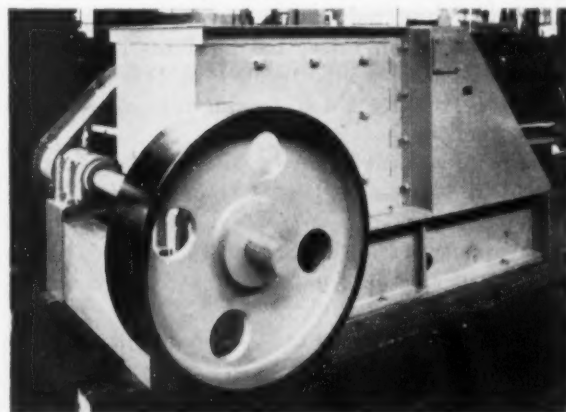
Recently the Gruendler Crushing and Pulverizer Company, St. Louis, Mo., planned the design of a crusher of a large size not currently available in its standard line. Consideration of all of the problems of engineering time, machining time, fabrication costs, final appearance, weight and a definite delivery dead-line resulted in the decision to design the machine for arcwelding.

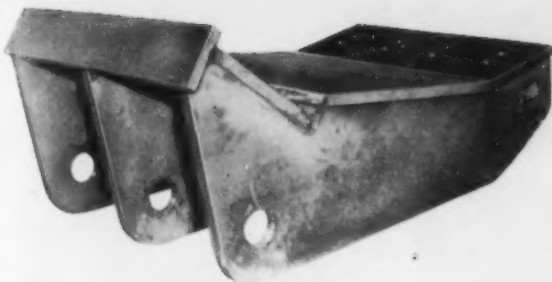
All of the assemblies and sub-assemblies were

fabricated by manual electric arcwelding and machine flame cutting. Standard structural members, steel pipe and plate sections were used throughout and all welds were fillet, butt or lap.

The frame for the previous crusher consisted of two separate side members, bolted together with a cast spacer at the front and with a pipe spreader at the rear. This method did not provide for sufficient rigidity in a large size machine. Therefore, in designing the new frame

**SINGLE ROLL CRUSHER**, with major components fabricated by arcwelding.





WELDED PITMAN for crusher represents cost savings of 70 pct, weight savings of 65 pct, and time savings of 55 pct over previous cast member.

this deficiency was overcome by including cross members and struts welded to the side assembly to form a rigid base frame for the crusher. The total shock resistance of the welded design is more than twice as great.

The main frame of the welded crusher is an internally braced box frame. Structural 15-in., 42.9-lb I-beams are used for the longitudinal and cross members. Additional corner bracing is given to the frame by welding 4x4-in. angle iron to the beams in two corners. Steel plates are welded to the sides of the cross beams of the frame to enclose and to further brace the frame and to transmit the stresses from the top flange to the bottom flange. Along the top of each longitudinal beam, a  $\frac{3}{4}$ -in. plate is welded to provide adequate shear area for bearing housing belts.

#### Welding Cut Costs 60 pct

The vertical H-beams to support the pitman are welded to the plates with full depth, double fillet welds because of the high concentrated stress and shock load at this section. To further counteract the horizontal thrust a triangular plate stiffener is welded to the vertical H-beam and to the I-beam. For rigidity a plate is welded to the top edge of the triangular stiffener.

Figures compiled by company officials indicate weight, time and cost savings in excess of 60 pct through arc welded fabrication of the frame.

In the design of the crusher previously used, the beds of the journals for both shafts are an integral part of the base frame. Thus repairs meant the complete shut-down and dismantling of the machine, and consequently total production stoppage. In the new welded design, the entire journal can easily be replaced and thus a minimum of shut-down time is necessary.

The welded pitman is fabricated from structural steel plates which are flame cut to the required sizes. The welding was facilitated by inserting a tube and a 2 5/16-in. diam rod into their respective holes in the ribs as temporary jigs. Stiffeners are welded between the ribs and to the lower plates. Electric arcwelding of the tube to the ribs did not distort the tube, which was used as a bearing surface without the neces-

sity of further machining. A cast iron pitman would be a cumbersome casting and would require considerable set-up time and jigs for machining. The deep hole that would be required in the casting would mean special machining equipment. The tension rod is easily made by welding a threaded rod to a section of heavy wall tubing. Otherwise the tension rod would have been made from a forging. The welded closed tube on the lock nut of the adjustment screw of the pitman spring tension rod to prevent falling material from damaging the threads is an excellent example of welding contributing to the protection of equipment.

Cost savings in welding the pitman equaled 70 pct while weight dropped 65 pct and time decreased by 55 pct.

#### Subassemblies Much Lighter

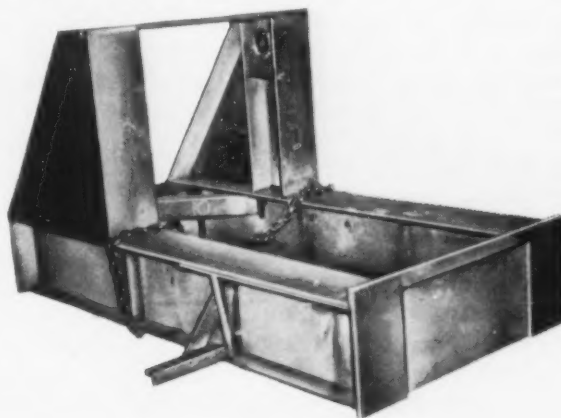
The roll on the welded crusher is fabricated from stock materials. On both sides of the 1-in. steel disc are welded the 2-in. thick steel hubs. This subassembly is then bored to shaft size and the keyway cut. The two finished sub-assemblies are then positioned on the shaft. A section of 24-in. OD pipe, 30 in. in length, is slipped over the discs and welded in place. A continuous fillet weld is used in the welding of the hub to the disc. The ease of handling the 205-lb welded disc and hub sub-assemblies as compared with the 2000-lb cast iron rotor is a striking example of the advantages of welded construction.

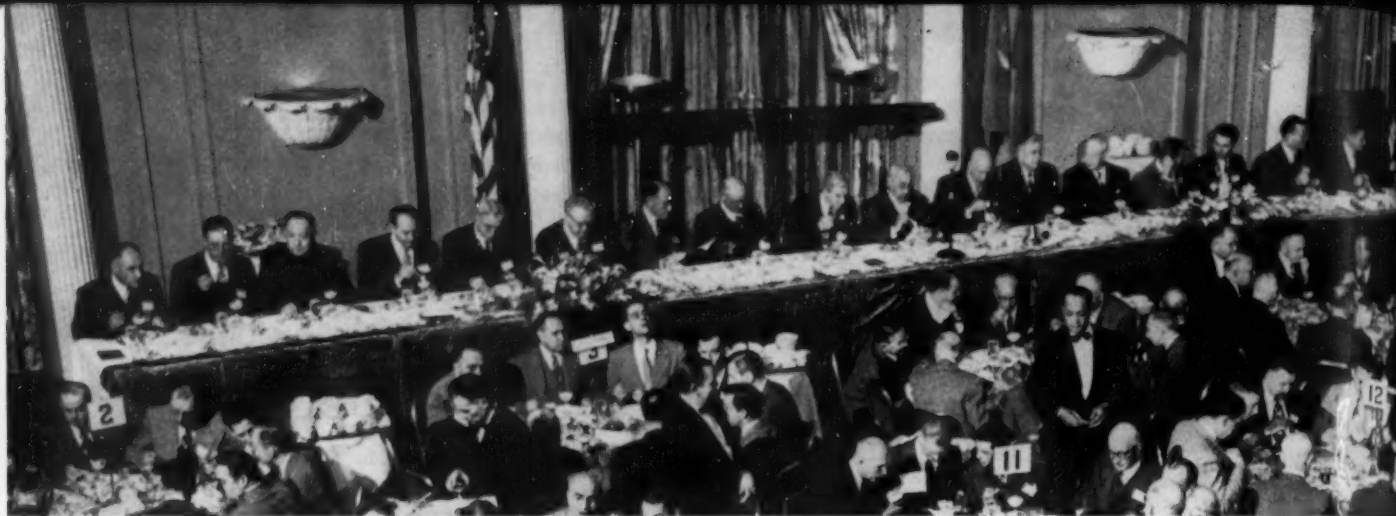
Weight reduction on the rotor was 65 pct, costs were decreased by 35 pct and machining time was cut in half.

The hopper, gear guard and numerous small braces and stiffeners were also arcwelded.

An additional advantage that the company found in welded fabrication is the possibility of sub-contracting the sub-assemblies when their own load is such that no additional work can be handled. This leaves only minor machining operations and final assembly to be scheduled at the home plant.

STRONG RIGID FRAME of single roll crusher is an internally-braced box frame. Resistance to shock is greater than previous cast frame.





**SPEAKERS TABLE** at the AIME Annual Fellowship Dinner, T. F. Patton, vice-president and general counsel of Republic Steel Co., was guest speaker at the banquet held on Tuesday evening, April 3.

# AIME

## *openhearth and blast furnace committee meet*

Higher production methods to make better quality products from improved raw materials were emphasized at this 3-day technical meeting. The openhearth version of "The Bazooka," ore beneficiation, oxygen melting and temperature control were featured.

The 34th annual meeting of the Blast Furnace, Coke Oven and Raw Materials Committee and the National Openhearth Committee was held in Cleveland, April 2 through April 4. Under the auspices of AIME, the 3-day technical program completely covered furnace operations, new practices, and improved methods, latest preparation of raw materials, refractories and metallurgical quality of products.

Hundreds of the engineers took the plant tour through Republic Steel Co.'s Cleveland plant on Monday afternoon. This plant is in the midst of a vast expansion program which will raise its ingot capacity from 80,000 net tons to 150,000 net tons a month.

Of great interest in Tuesday's blast furnace

session was a paper by S. E. Erickson, beneficiation engineer, M. A. Hanna Co. Mr. Erickson pointed out to the furnace operators that it might be a better idea to try to adapt their melting processes to present ores than to try to manufacture ores to fit established processes.

Finely divided iron ores are easier to reduce than coarse chunks anyway and this speaker declared that agglomeration procedures are the only big technical problems in the general program of using beneficiated ores. Under such circumstances, Mr. Erickson asked, "Why should not more thought be given to other methods of smelting the fine iron-ore concentrates rather than direct all the effort to development of agglomeration methods?"



Present practices in iron ore beneficiation were reviewed in detail and a detailed flow sheet for processing monmagnetic taconites was proposed. In this scheme, the cherty taconites would be treated by magnetic roasting to convert all the iron oxide to magnetite. Recovery is then done by magnetic separators.

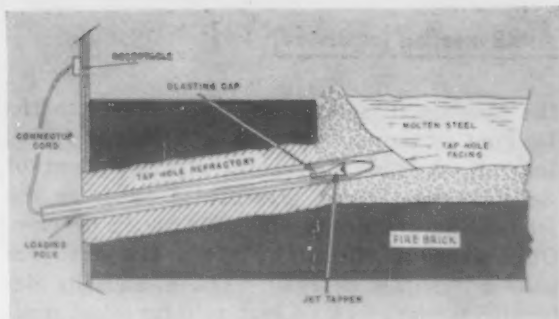
The serious materials handling problem of shipping fine particles of ore was brought out in the discussion. Two big problems in the budding taconite industry in Minnesota have not received adequate public consideration, Mr. Erickson declared. Before big tonnages of this product can be made more electric power and process water must be made available.

Natural gas will be available on the Mesabi by 1953 and this fuel will cut the cost of roasting should the magnetic roasting process be adopted.

#### Oxygen Used In Burners

The basic openhearth operating session delved into the methods of increasing openhearth production. Oxygen in steel melting has blown hot and cold for the past 5 years but interest was rearoused by C. W. Drabers of Wheeling Steel Co. when he delivered his paper on their use of  $O_2$  in the flame.

Wheeling has increased their production from 12.3 tons per hr to 17.5 tons per hr by introducing oxygen in the burners. They use 600 cu ft of  $O_2$  per ton, 520 of which goes through the burners; the balance is used for straight carbon reduction at the end of the melting period. Most of the oxygen used in openhearth has been introduced by the lance or jet methods for carbon reduction only and has not been used in the flame. The Wheeling plant at Steubenville generates their own oxygen and the higher production rates achieved have more than justified this expenditure.

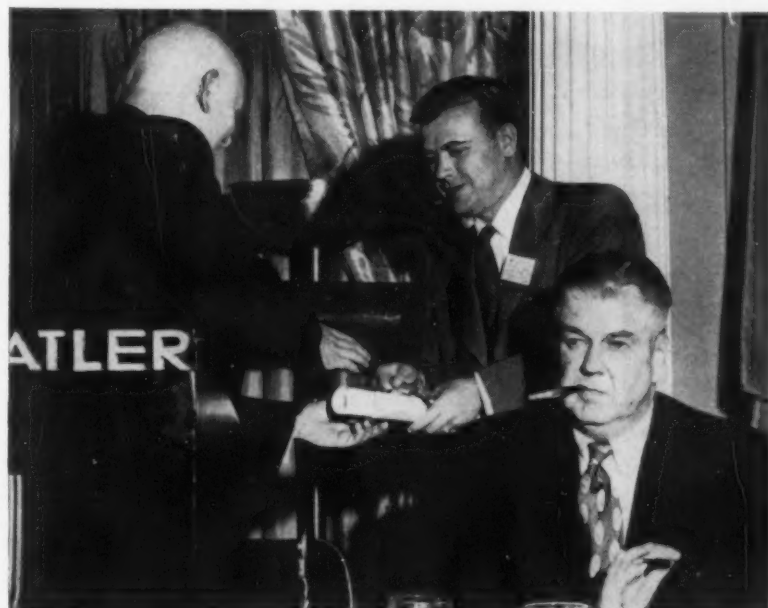


CROSS-SECTION of openhearth tap hole showing the DuPont jet tapper in firing position. Faster, safer, better taps are secured with this method. Drawing courtesy DuPont.

In the openhearth quality and metallurgical session temperature control, manganese loss, surface quality of killed steel, capped steel production, statistical control and low carbon rimmed steels were featured. W. T. Sergy, steel works metallurgist, Jones & Laughlin Steel Corp., compared temperature control of the bath by thermocouple and pyrometer or blowing tube methods. This work, done at the Pittsburgh Works, demonstrated that as far as this shop is concerned, the thermocouple method has proved much more reliable.

The thermocouple costs less than the blowing tube; however, costs per reading for the two methods are about the same. The thermocouple, Mr. Sergy cautioned, is fragile and greater care must be exercised in its use. It takes 5 sec to obtain a reading with the immersion pyrometer compared to 20 sec per reading with thermocouple. Two steel grades have been thoroughly investigated and standard tap temperature ranges and practice is already set up for these steels based on thermocouple techniques at J&L.

Literally the hottest item brought out during



H. M. GRIFFITH presents the McKune Award to P. A. Gaebe, Kaiser Steel Co., for his paper "Practical Consideration of Openhearth Bottom Construction."

the openhearth session on Wednesday was the Du Pont jet tapper developed by Arthur D. Little, Inc. H. J. Walker, general superintendent of Republic Steel Plant, presented a paper on the jet tapping practice in operation at the Warren, Ohio, plant. Mr. Walker noted that the jet tapper uses a "shaped charge." The electrically detonated tapper creates a high velocity jet of small copper particles which will penetrate more than 6 in. of cold steel.

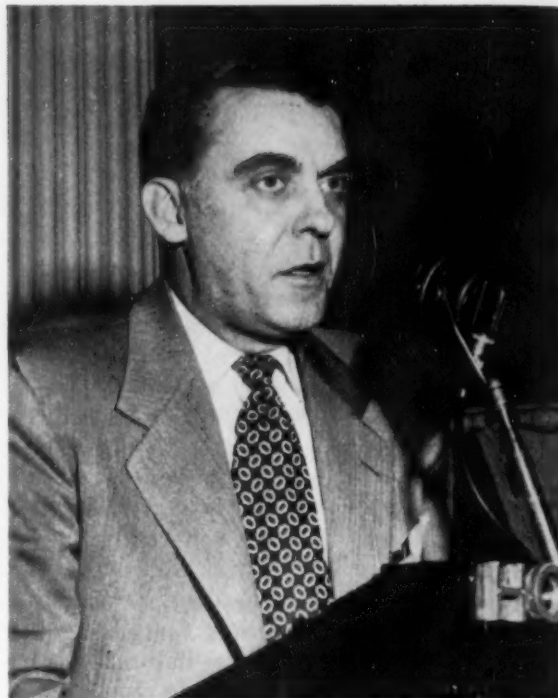
#### **OH Bazooka Much Safer**

Preparation of the tap hole of openhearth furnaces for jet tapping is the same as for oxygen lancing. Advantages of jet tapping are: (1) *Greater safety as the furnace men don't have to be near the runner when the tap hole is opened;* (2) *no danger of burns from faulty oxygen lances;* (3) *heat can be tapped at exactly the right time;* (4) *full and immediate metal flow out the runner into the ladle cuts tapping time and danger of skulls;* and (5) *less tap hole maintenance.*

The McKune award, an annual event of the meeting, was given to P. A. Gaebe, Masonry Dept., Kaiser Steel Corp., Fontana, Calif. Mr. Gaebe won the honor with his paper, "Practical Considerations of Openhearth Bottom Construction."

The opening session of the joint committees was a breakfast meeting which featured a talk by Tom Campbell, editor, *THE IRON AGE*, who spoke on raw materials. Mr. Campbell voiced optimism concerning the supply of ore and coal and scrap to meet today's capacity production.

EARL C. SMITH briefed the convention just prior to the plant tour of Republic Steel Co.'s Cleveland plant.



**TOM CAMPBELL** was optimistic about the future supplies of raw material to meet the expanding ingot production.

He declared that the industry will also find a way to supply the additional raw materials needed when the full expansion program for ingot production is completed.

Imports of foreign ore, plus increasing tonnages of beneficiated ores from the Mesabi, will meet the higher demand rates when and as they occur. Even the dark outlook of scrap has a brighter side, the editor declared, but a modification in price might be necessary to fully collect and supply this vital material.

#### **Members Tour Republic Steel Plant**

Earl C. Smith, chief metallurgist, Republic Steel Corp., welcomed members who were Republic Steel's guests at the breakfast. He outlined their expansion program and briefed the group on the tour of the Republic plant. One of the main points of interest was the world's most controversial blast furnace, first of the pressure top furnaces ever operated.

New officers for next year were elected by both committees. H. M. Griffith, works manager, The Steel Co. of Canada, Ltd., becomes past chairman of the National Openhearth Steel Committee; A. H. Sommer, superintendent of steel mills, Keystone Steel & Wire Co., is the new chairman and J. J. Golden, asst. to vice-president, steel production, U. S. Steel Co., is the new vice-chairman of the openhearth committee.

New officers for the Blast Furnace Committee are E. K. Miller, Asst. Vice-President, Jones & Laughlin Steel Corp., chairman; C. C. Russell, chemical engineer, Koppers Co., vice-chairman and Samuel Naismith, evaluation engineer, Oliver Iron Mining Co., vice-chairman.

# glass SOLVES

## DELICATE CORING PROBLEMS

By D. D. Malcomb

Vice Pres. & General Mgr.  
Duncan-Rohne & Co.  
North Hollywood, Calif.



**Thin, fragile cores necessary for the production of radar tube-feed antenna units by investment casting are reinforced with Pyrex glass tubes. By this means, the cores are able to withstand turbulence and shock of the metal entering the cavity.**

Special techniques were necessary at Duncan-Rohne & Co., North Hollywood, Calif., for the production of a thousand radar tube-feed antenna units per month. Precision investment casting was selected as the speediest means offering the greatest economic advantage for making these intricate "radar horns." The unit would be practically impossible to machine; fabrication would be slow, expensive, and produce difficulty in maintaining uniformity of parts. Electroforming would also be expensive, and still require additional machining.

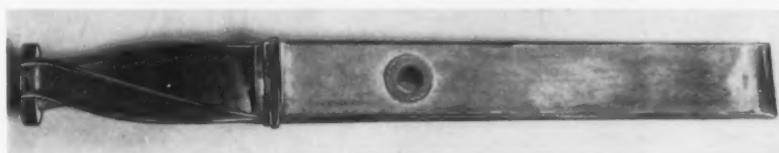
The tube-feed, shown in Fig. 1, is more than 10 in. long and made of a weldable aluminum alloy, with a wall thickness of 0.050 in. The inside of the tube measures 0.900 x 0.400 in., with tolerance of  $\pm 0.003$  in. for the core of the horn, applied for over 6 in. of its length. There is a full 90° twist in the first 3 in. of the tube, which poses a delicate coring problem. The remaining

4 in., toward the tube tip, tapers within a 2-in. length to 0.900 x 0.196 in., which size continues to the tube end.

The first step was designing the mold for efficient reproduction of the wax patterns. Aluminum was used for all mold parts, with the exception of the tool steel mold core. Cores of either aluminum or brass were not used because they would wear excessively under repeated use. Also, such a long core would bend easily, and possibly be subject to marring on the sharp edges or scratches on the broad, flat surfaces.

A plastic wax, similar to other industrial waxes, was injected into the mold at 151°F and 900 lb pressure, producing a wax pattern measuring closest to the estimated pre-casting dimensions. While no particular formula has been worked out, it is a proven fact that wax patterns from the same mold will vary about 0.001 in. per in. for each 300-lb variation of air pressure. This

FIG. 1—Radar tube-feed antenna unit made by investment-casting a weldable aluminum alloy into molds having Pyrex tubes for reinforcing the core.





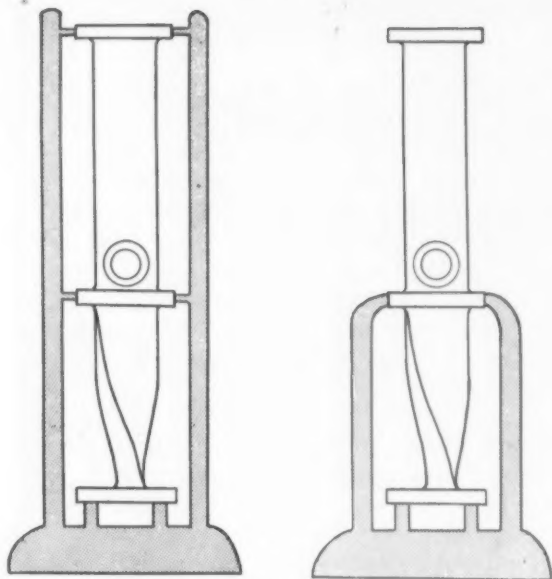


FIG. 2—Conventional spruing methods such as these were found inadequate; cores were unable to withstand the turbulence of metal flow into the cavity.

#### Glass in cores (continued)

same variation will result from a 4°F change in wax temperature. Precise temperatures and pressures were therefore used on the radar horn mold.

Twelve wax patterns of the horn were then sprued, using the three different spruing methods shown in Figs. 2 and 3. Of the eight flasks sprued conventionally as in Fig. 2 (sprues to the

heavy sections with diameter equal to the thickest casting section), only one good casting resulted from each method. All failures were due to the cores collapsing from the turbulence and velocity of the metal entering the cavities.

Fig. 3A illustrates the method used for backfilling metal into the cavity. The wax pattern was sprued to the rubber base and two sprues were run the entire length of the casting, curving over the end of the pattern and attaching to its top. Wax was removed from the invested flask with dry steam, the two base sprues, AA and A, serving as wax outlets.

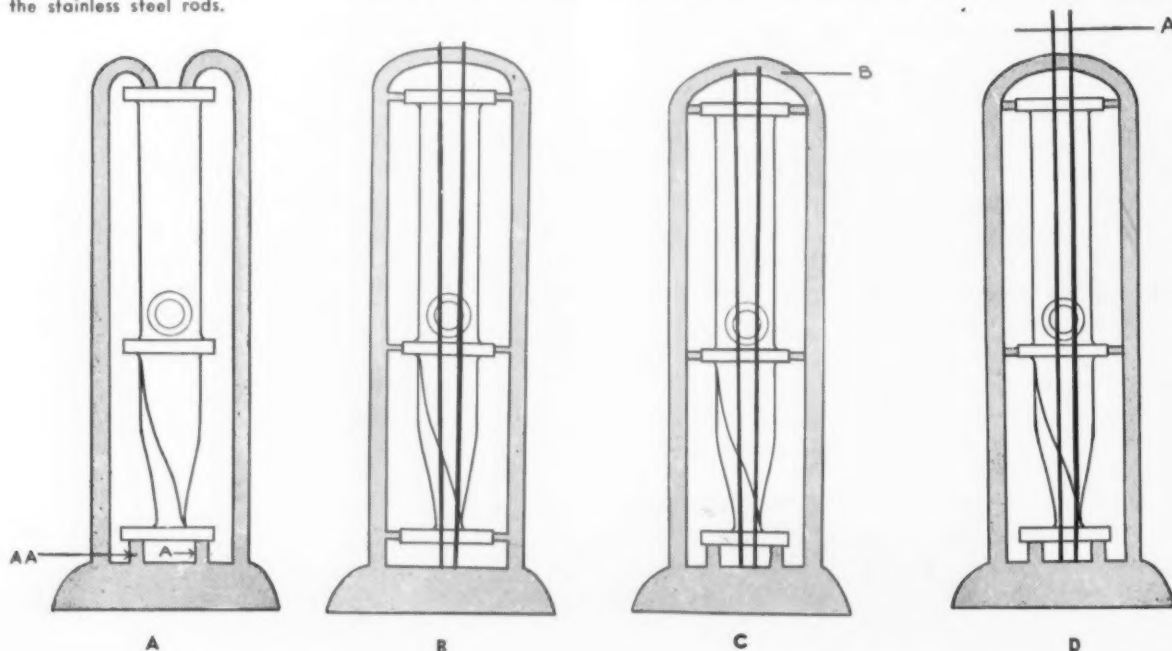
#### Backfilling Offers Advantages

These two base sprues were then sealed off with plaster, leaving the two long sprues open at the base of the flask, after which the flask was placed in an oven for regular burnout. On casting the part, the metal ran down the long sprues and backfilled into the cavity with a minimum of turbulence and shock.

Of the four flasks sprued, as in Fig. 3A, two of the cavities failed to fill. This was due to the thin wall sections and the distance and direction the metal was forced to travel to reach the cavity, plus the fact that the flask temperature was only 200°F. However, the cores did not break in either flask. To get a fillout in the other two, both the metal and the flasks were deliberately overheated. The castings were, for this reason, unsatisfactory, but two castings were made without breaking the cores.

The important thing learned was that metal will backfill into a cavity with less force and

FIG. 3—Backfilling the metal into the cavity by means of the two long sprues as in A proved a partial solution by slowing metal flow. The short sprues at AA and A were stopped off with plaster before casting. Two unlubricated stainless steel rods mounted in a fixed position were tried as shown in B, but unbalanced expansion of the flask and rods caused the cores to shatter while flasks were still in the oven. Lubricated rods, set to expand out the end of the flask as shown at A, in C, were a more practical approach. However, the rods still lacked sufficient rigidity. Final evolution of the pattern mounting, see D, shows Pyrex glass tube-stock, free to expand or contract through the sprue cavity at B, above, used in place of the stainless steel rods.



turbulence than when cast directly into the cavity. Later experiments proved that castings with cores more delicate than those contained in the radar horns would fill under normal casting conditions, provided that the part had thicker wall sections or was shorter in length.

Since the percentage of castings lost in the first trial cast was too high, two alternate spruing methods were tried. Four wax patterns were sprued in each of the ways shown in Figs. 3B and 3C. In Fig. 3B, the cores were reinforced with two stainless steel rods 0.10 in. in diam. The rods extended the entire length of the core, and were attached top and bottom in a fixed position. The rods were invested dry, without lubrication.

The other four flasks were sprued in the same manner, only the stainless steel rods were lubricated with graphite, and the rod ends were left extending out of the plaster, as shown at A in Fig. 3C. This allowed the rods to expand at a different ratio than the investment expansion.

Use of stainless reinforcing rods did not yield any good castings, but served to show that the unlubricated rods set in a fixed position had expanded more than the investment had; this

forced the rods to bend, and the cores shattered while the flasks were still in the oven.

The lubricated rods, set to expand out the end of the flask, were practical as far as the technique was concerned. The rods were not warped, and had expanded and contracted free of the investment. However, the rods were not rigid enough to withstand the force of the metal as it entered the cavity, which resulted in a slight crack in each core. The problem resolved to one of finding a more rigid support for the core.

Twelve patterns were sprued in the same manner as in Fig. 3C, except that pyrex glass rods were used in place of the stainless steel reinforcing. The rod ends were free to expand or contract in the sprue cavity, as shown in Fig. 3D. Six patterns were set up with pyrex glass bar-stock, while six others were made using tube-stock. Graphite was again used as a lubricant.

Of the 12 flasks cast, nine produced good castings—four from the bar-stock and the balance from the tube-stock-reinforced cores. The pyrex glass tubing is now being used in regular production on the radar horns, and castings are running about 90 pct perfect.

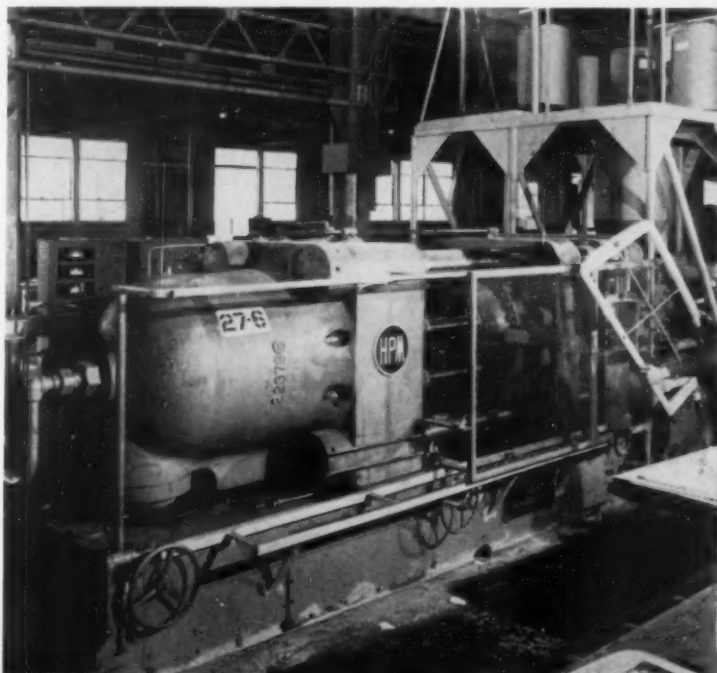
## *Largest injection molding line in operation*

One of the largest production lines for large injection molded plastic parts is now in operation at General American Transportation Co.'s new factory in East Chicago, Ind. Typical parts being molded are refrigerator freezer chest doors, refrigerator humidifier drawers and television "windows."

The line consists of 5 injection molding machines built by the Hydraulic Press Mfg. Co., each capable of molding 60 oz of material per cycle. Molds are closed with 1000 tons pressure in these 100,000-lb machines. Plastic injection pressure is 20,000 psi.

The illustration shows one of the 5 HPM machines, and a refrigerator inside door frame made on it. Production cycle is approximately 1 min. This part was formerly made in four pieces. This machine makes it in one piece thus saving assembly costs.

100,000-LB MACHINE molds large plastic parts in one piece.



**By C. H. Creasser**

*Asst. General Manager,  
Combustion Engineering-Superheater, Inc.  
E. Chicago, Ind.*



## studwelding **SLASHES FABRICATION TIME**

Combustion Engineering-Superheater, Inc., slashes assembly time for large power plant equipment through use of end-welded studs. Replacing conventional drilling and tapping holes for studs, this method permits placing studs as fast as 5 per min. A unique aligning device aids accuracy and speed.

**A**t the East Chicago, Ind., plant of Combustion Engineering-Superheater, Inc., studwelding has proved a time and money-saver in the assembly of large coal pulverizers and steam generators.

Fabrication of large units used in steam and power generating stations requires an extensive amount of assembly work in fastening portions of the machinery together to form a finished product. Since many of the components are large

and unwieldy, any fastening method which speeds assembly operations is particularly advantageous—provided the fasteners can withstand the terrific strains and vibrations to which the equipment is subjected.

For the past year, end-welded studs have been used to advantage on several different coal pulverizer and steam generator components. Studs up to  $\frac{7}{8}$  in. diam are end-welded to machine frame members at the rate of 4 or 5 a minute. Much



faster than the conventional drilling and tapping, this method lends itself particularly well to the manufacture of large machines such as those being built at CE's plant.

Cover plates for the exhaustor casings of coal pulverizers are held in place by as many as 64  $\frac{7}{8}$ -in. end-welded studs on each side of the casing. Smaller casings with a 6-ft 10-in. diam use 48 studs on each side.

### Time Savings Are Substantial

Substantial savings have resulted on this operation and Combustion is now able to complete this job in a fraction of the time formerly required. Originally, the casings, which are approximately 1 in. thick, were drilled and tapped. This laborious method of fastening a bolt to a frame member has been replaced by studwelding, which requires less than 20 sec for each complete weld. The drilling, tapping, and stud setting method required 2 to 4 min.

Engineers of Combustion Engineering and the Nelson Div., Morton-Gregory Corp. developed a special stud locating device to assure proper alignment of the studs around the casing. The locating device consists of a plate attached to the gun, with two set screws fastened to the plate at right angles to the stud.

After the operator places the stud and ceramic ferrule in the chuck of the gun, he positions the tip of the stud in the center punch mark on the casing. He then holds the two set screws against the inner surface of the casing and presses the gun's trigger. In effect, the locating device provides the tripod arrangement which assures welding the stud square to the work in a true bolt circle.

### One Part Uses 72 Studs

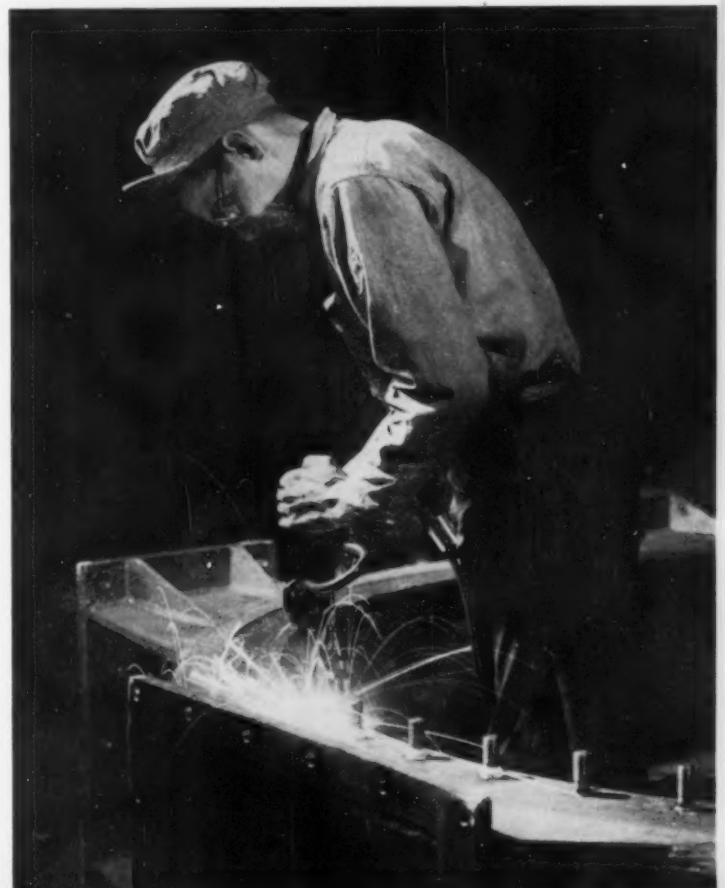
Seventy-two studs, in four different sizes, are used on the coal pulverizer separator top. Studs of  $\frac{1}{4}$ -in. diam are used to secure the segment for the operating vane. The inspection cover for the separator top is held in place by  $\frac{1}{2}$ -in. studs, while each of the access doors are secured by  $\frac{5}{8}$  x 2-in. end-welded studs. Eighteen  $\frac{3}{4}$ -in. standard Nelson MG studs secure the inner cone plate and rings to the separator top. In each case the studs are first located by use of a simple template and center punch mark. The operator then welds all studs of one size in place, changes chucks in the gun, and moves on to the next size stud.

As many as 75  $\frac{1}{2}$  x 1-in. MG studs are end-welded to casing headers used on steam generators. The header is fabricated from plates of sheet steel, and the stud locations determined by a simple template. Studs are then end-welded into position at a speed which greatly exceeds the drilling and tapping method formerly used for this operation. The portability of the gun makes it possible to keep the studwelding operations at the most efficient location in the plant. Expensive fixtures are not required for the operation, and in many cases the casing header is simply placed on the floor of the plant close to the welding generators.



TEMPLATE attached to studwelding gun aids in aligning studs. Studs are located by center punch marks. Template on gun has two set screws perpendicular to stud itself. With stud, screws give tripod effect insuring that when all three touch, stud is perpendicular to work surface.

COAL PULVERIZER exhaustor being fabricated at Combustion Engineering-Superheater plant. Operator welds  $\frac{1}{8}$ -in. studs at rate of 4 to 5 per min. Previous method, using drilled and tapped holes, took 2 to 4 min. per fastener.



# TEN ZIRCONIUM ALLOYS EVALUATED

By F. B. Litton

Senior Metallurgist

Foote Mineral Co., Phila-  
delphia

The oxidation resistance of zirconium is not improved by alloying. Minor amounts of aluminum and nitrogen decreased, while oxygen slightly increased, oxidation resistance. Arc melted metal had better resistance to oxidation than did induction or graphite crucible melted zirconium.

## PART II

A number of zirconium alloys were heated in still air at 750°C to determine their oxidation resistance relative to zirconium. The results of an initial survey are recorded in Table

*Part I appeared in last week's issue.*

X. Data were obtained on both induction and arc melted alloys.

The results indicated that the oxidation resistance of zirconium would not likely be greatly improved by alloy addition. However, the oxi-

dation resistance of arc melted alloys was superior to induction melted alloys.

The elements aluminum, tantalum, nickel and beryllium in 5 pct concentrations increased the oxidation resistance of induction melted zirconium. Aluminum concentration of 1 pct decreased the resistance of both zirconium and 50 pct Zr-Ti alloy. The latter alloy reacted with air at 750°C very rapidly, which suggested that alloys in this ternary system might be investigated for their *gettering* properties. Arc melted 5 pct tantalum, tungsten and nickel alloys oxidized less than arc melted zirconium metal.

To determine the effect of oxygen and nitrogen addition on the oxidation of zirconium, oxygen-zirconium and nitrogen-zirconium alloys were prepared by heating strip specimens of cold-rolled zirconium in pure oxygen and nitrogen at reduced pressures. Oxygen and nitrogen contents were determined from the weight gained during absorption of the respective gases. Uniformity of gas content was determined by metallographic study and micro-hardness measurements. The weight gained after heating in still air at 750°C for 2 hr are tabulated in Table XI.

### O<sub>2</sub> and N<sub>2</sub> Have Opposite Effects

Assuming an average value of 200 mg per sq dm weight gain for high quality cold-reduced iodide zirconium, when heated for 2 hr at 750°C in still air, the results showed that oxygen increased and nitrogen decreased the oxidation resistance of zirconium.

The oxidation resistance of the oxygen-zircon-

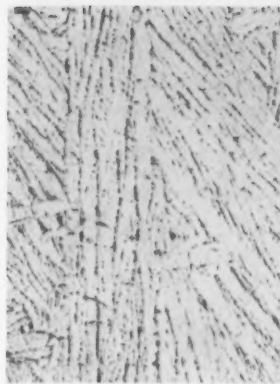
TABLE X  
OXIDATION RESISTANCE OF ZR ALLOYS

Intended Composition	Weight Gain, Mg per sq dm	
	Induction Melt* 6 hr at 750°C	Arc Melt 2 hr at 750°C
100 pct Zr	3,300	415
5 pct Ti, 95 pct Zr	Disintegrated	—
1 pct Al, 99 pct Zr	Disintegrated	—
4 pct Al, 96 pct Zr	—	550
5 pct Al, 95 pct Zr	413	—
5 pct Ta, 95 pct Zr	1,450	314
5 pct Nb, 95 pct Zr	Disintegrated	—
5 pct W, 95 pct Zr	2,600	209
5 pct Mo, 95 pct Zr	Disintegrated	957
5 pct Ni, 95 pct Zr	1,690	181
7.5 pct Ni, 92.5 pct Zr	3,120	—
5 pct Cr, 95 pct Zr	3,198	—
5 pct V, 95 pct Zr	Disintegrated	—
5 pct Pt, 95 pct Zr	Disintegrated	—
5 pct Be, 95 pct Zr	1,660	—
5 pct Si, 95 pct Zr	Disintegrated	—
50 pct Ti, 50 pct Zr	Disintegrated (a)	—
1 pct Al, 50 pct Ti, 49 pct Zr	Disintegrated (b)	Disintegrated (b)

\* Graphite crucibles.

(a) Alloy disintegrated in about 45 min

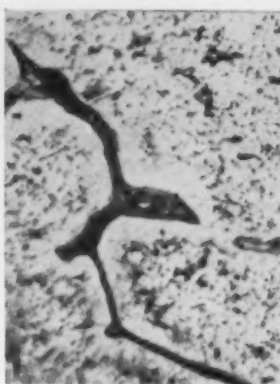
(b) Alloy disintegrated in about 10 min



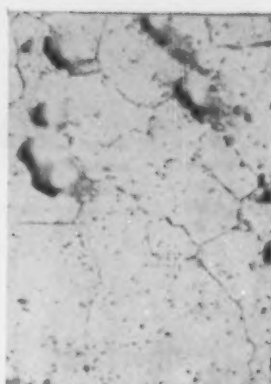
A—Arc melted Zr iodide



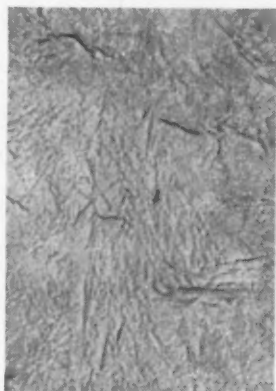
B—0.25 pct Fe-Zr furnace cooled from 750°C



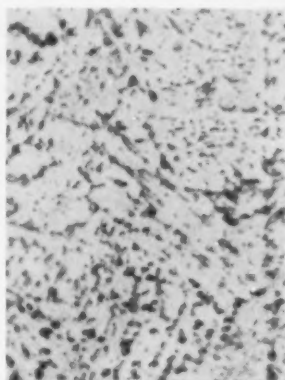
C—Cast, 0.023 pct Si-Zn



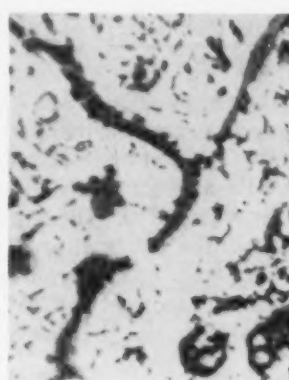
D—12.5 pct Ta-Zr cold-rolled and annealed



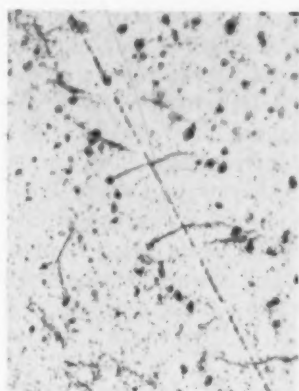
E—2.09 pct Cu-Zr alloy quenched from 950°C



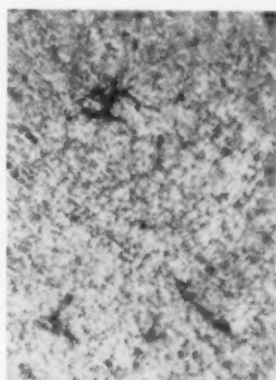
F—2.09 pct Cu-Zr alloy furnace cooled from 750°C



G—Cast 0.47 pct Ni-Zr alloy



H—4.07 pct W-Zr alloy after furnace cooling from 900°C



J—2.87 pct Mo-Zr alloy quenched from 700°C



K—5.30 pct Mo-Zr alloy furnace cooled from 900°C

FIG. 3—Typical microstructures of pure zirconium and various alloy compositions. All photomicrographs are at 750X. All samples, except D, were etched with a modified Tuckers reagent. The Ta-Zr alloy shown in D was etched with 20 pct HF acid in glycerine.

ium and nitrogen-zirconium alloys described in Table XI was also determined by heating specimens in high pressure steam at 315°C for 2 weeks. All test specimens in the nitrogen series disintegrated during the test period. The specimens in the oxygen series were iridescent in color and changed very slightly in weight. Autoclave test confirmed the observation in the previous section that oxygen increased and nitrogen decreased the oxidation resistance of zirconium.

Zirconium alloys containing aluminum, tantalum and columbium were tested for oxidation resistance by heating in high pressure steam at 315°C. The results of the autoclave test are shown in Table XII. The autoclave tests showed that small concentrations of aluminum decreased and addition of tantalum and columbium did not appreciably influence the oxidation resistance of zirconium.

The microstructure of as-cast arc melted iodide



TABLE XI

OXIDATION RESISTANCE OF O<sub>2</sub>-Zr  
AND N<sub>2</sub>-Zr ALLOYS

Oxygen Series		Nitrogen Series	
Oxygen Content, pct	Weight Gain, mg per sq dm	Nitrogen Content, pct	Weight Gain, mg per sq dm
0.041	153	0.013	600
0.044	129	0.061	313
0.059	150	0.079	227
0.073	121	0.080	474
0.105	131	0.091	1575
0.445	143	0.093	252
1.002	127	0.136	484
		0.144	318
Average	136.3	0.156	313
		0.408	248
		Average	480.4

TABLE XII

OXIDATION OF Zr CONTAINING Al, Ta, AND  
Cb IN AN AUTOCLAVE AT 315°C.

Aluminum Series		Tantalum Series		Columbium Series	
Al Content, pct	Weight Gain, (a) mg per sq dm	Ta Content, pct	Weight Gain, mg per sq dm	Cb Content, pct	Weight Gain, (a) mg per sq dm
Zr base	14.6	—	—	—	—
0.05 Al-Zr	203.5	0.25 Ta-Zr	16.3 (b)	0.5 Cb-Zr	9.5
0.10 Al-Zr	394.0	1.5 Ta-Zr	wt. loss (a)	1.5 Cb-Zr	9.2
0.20 Al-Zr	696.0	7.0 Ta-Zr	51.1 (b)	30.0 Cb-Zr	72.6
0.30 Al-Zr	Severely attacked	—	—	—	—

(a) 1 week test period

(b) 2 week test period

## Ten zirconium alloys (continued)

zirconium is shown in Fig. 3A. The second phase normally present was attributed to minor impurity content. The structure of an alloy containing 0.25 pct Fe and 0.23 pct Si respectively, are shown in Fig. 3B and C. These photomicrographs demonstrate the insolubility of these two elements in alpha and beta zirconium respectively, and, the pronounced effect of small amounts of impurities on the microstructure.

## General effect of alloys

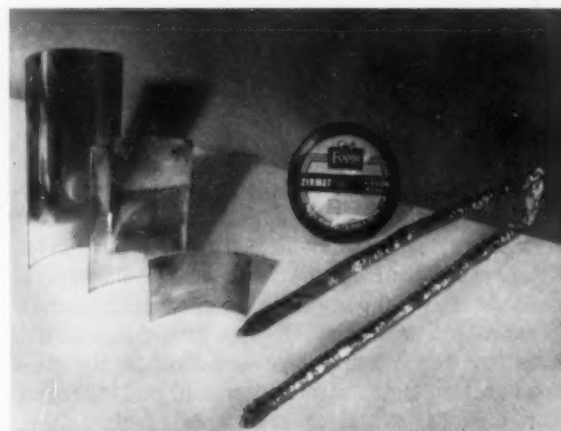
1. The oxidation resistance of arc melted zirconium alloys was generally superior to induction melted alloys using graphite crucibles.
2. Hafnium concentration up to 8.2 pct did not affect the tensile properties of zirconium.
3. Alloys containing low concentrations (less than 1 pct) of tungsten or molybdenum and tested in the as-rolled condition, 400°C, possessed strengths comparable to alloys having relatively high (from 4 to 50 pct) alloy addition. In the ductile range of composition, nitrogen and oxygen were observed to be very satisfactory alloy additions.
4. Oxidation tests indicated that the resistance of zirconium would not likely improve through alloy addition. Small concentrations of aluminum (about 0.05 pct) and nitrogen (<0.013 pct) decreased the oxidation resistance.
5. Metallographic studies indicate that zirconium alloy systems are predominantly eutectoidal. Metallographic data should be supplemented with thermal and X-ray analyses before the potentialities of a particular alloy system are fully developed.

In ultra-pure zirconium, the extent of the second phase was observed to vary with the hydrogen content.

The microstructure of 12.5 pct Ta-Zr alloy (melted in a graphite crucible) is shown in Fig. 3D. The matrix was substantially single phase, indicating wide solubility of tantalum in zirconium. Fig. 3E shows the structure of 2.09 pct Cu-Zr alloy quenched from 950°C. The structure of the same alloy is shown in Fig. 3F after furnace cooling from 750°C. Copper not only was soluble up to 2.09 pct in beta zirconium, but also affects the solubility of impurities. Fig. 3F indicated that copper has limited solubility in alpha zirconium.

The as-cast structure of 0.47 pct Ni-Zr alloy is shown in Fig. 3G. This structure indicated limited solubility of nickel in both alpha and beta zirconium. Fig. 3H shows the structure of an alloy containing 4.07 pct W. The structure indicated this concentration was soluble in the two modifications of zirconium. The structure of two molybdenum alloys is shown in Fig. 3J and 3K. The appearance of a second constituent in the higher molybdenum concentration indicated that the solubility of molybdenum in alpha zirconium was between 2.8 and 5.3 pct.

FIG. 4—Zirconium strip, wire and crystal bar. The wire diameter is 0.009 in. Zirconium has wide usefulness in surgical applications.



# news of industry

## FAST TAX WRITE OFFS—Hasty Approval Under Fire

**NPA spokesman says 48 steel projects totaling half a billion dollars were approved without investigation . . . Hazleton Steel & Tubing and Green River are breaking ground.**

Washington—National Production Authority approved, without investigation, 48 steel company applications for fast amortization of new plants totaling almost half a billion dollars, a National Production Authority spokesman said last week. The official, H. B. McCoy, assistant administrator of NPA, reported this before a House Expenditures subcommittee.

Mr. McCoy also reported that in some cases NPA's investigators actually turned in unfavorable reports after applications for certificates of necessity had been approved.

Many government loans have been granted, with little investigation, on the basis of approved certificates of necessity. Approval of a certificate of necessity names a plant as essential to the defense effort and practically assures it a government loan.

### **Hazleton Breaks Ground**

This may be only the curtain raiser of a sweeping investigation of fast tax write-offs and government loans.

The subcommittee has been investigating an application by Hazleton Steel & Tubing, Hazleton, Pa., for \$7.8 million defense loan. Hazleton's application for a certificate of necessity has been approved.

Elsewhere it was learned that Hazleton is planning to start breaking ground for its new electric furnace mill this week. The

mill is rated at 120,000 net tons annual capacity. It would produce oil well casing and drill pipe (seamless tubing) 4½ in. to 8 in. OD. Plans call for 78-in. blooming mill to roll billets from large slabs.

Principal backers of the project are Benjamin F. Dowd and Martin C. Charles.

### **Green River Breaks Ground**

Also breaking ground for a new mill is Green River Steel Corp. at Owensboro, Ky. Green River has obtained approval of a certificate of necessity and a government loan for \$8,356,000. Plans also call for an electric furnace mill, with an annual capacity of 189,000 tons. Equipment includes two 55-ton electric furnaces and a bar mill. Principal products would be electric furnace carbon and high-alloy hot-rolled bars, with the accent on aircraft and shell quality steel.

Both of these projects are designed to utilize local electric furnace scrap. Both are aimed at taking advantage of the market protection furnished by freight umbrellas resulting from the present f.o.b. method of selling steel.

### **British to Allocate Magnesium**

London—The British Ministry of Supply will allocate virgin magnesium as of May 1 in view of the growing scarcity of the metal. During April, consumers will be permitted to buy all they can.

### **Steel's Earnings**

Pittsburgh — The Iron Age complete financial analysis of the steel industry for 1950 appears on p. 126. Listed below are highlights of the earnings-tax-ships picture for the 26 steel firms surveyed. They represent about 92 pct of steelmaking capacity. Much greater percentage-wise than all other profit and dividend gains over 1949, were Federal taxes paid out.

Net earnings . . . . .	up 40.9 pct
Net sales, operating revenue . . . . .	up 27.4 pct
Federal income tax provision . . . . .	up 103.5 pct
Steel shipments . . . . .	up 25.7 pct
Common dividends declared . . . . .	up 49.8 pct
Surplus . . . . .	up 21.2 pct
Invested capital . . . . .	up 7.9 pct
Capital per ton of ingot capacity . . . . .	up 1.9 pct

### **Laclede-Christy Buys Plant**

Osceola Mills, Pa. — Laclede-Christy Co. of Pa. has bought the plant and property of Paterson Fire Brick Co., Clearfield, Pa., which specialized in stiff mud clay refractory brick. Laclede will add facilities immediately to push up steelmaking refractory production.

### **Blast Furnace for Volta Redonda**

Pittsburgh — Brazil's Volta Redonda steel plant will get a new blast furnace with a 25-ft hearth diam and a battery of 21 chemical-recovery coke ovens. Pig iron capacity will be doubled and carbonizing capacity will jump from 1600 to 2212 tons per day. Builder will be Koppers Co.

## INDUSTRIAL SHORTS

**Negotiates License** — Pratt & Whitney Aircraft division of United Aircraft Corp. is negotiating a license to permit the NASH-KELVINATOR CORP., Detroit, to manufacture the 2500 hp Double Wasp piston engine for the military services.

**Heating Furnaces**—RUST ENGINEERING CO. will build four continuous slab heating furnaces to serve a strip mill at the Morrisville, Pa., plant of U. S. Steel Co. Designed to burn coke oven gas, natural gas, or fuel oil, the furnaces will have a capacity of 135 tons per hr.

**Key Position**—W. J. McBrien, vice-president of the CATERPILLAR TRACTOR CO., Peoria, Ill., has accepted the key position of vice-chairman of the Munitions Board for several months, in support of the national emergency.

**Keeps In Step** — By producing an average of more than 10 million tons per week since Jan. 1, bituminous coal easily kept pace with the mobilization schedule in the first 3 months of 1951, according to the BITUMINOUS COAL INSTITUTE, Washington.

**New Home**—The offices and laboratories of the BURRELL CORP. have moved to new quarters at 2223 Fifth Ave., Pittsburgh. All needed facilities have been brought together in one modern building.

**New Foundry Division**—Further expansion of present plant facilities with the opening of a new foundry division has been announced by ROSAN, INC., South Gage, Calif., manufacturers of Rosán inserts and studs.

**Rockwell Division** — Organization of a separate division at the Freeport, Ill., plant of Rockwell Mfg. Co., was formed to fabricate armor plate, and will operate as the FREEPORT DIV.

**Accidents Curbed** — Accident rates at the copper mine and reduction plant of the PHELPS DODGE CORP., Morenci, Ariz., have dropped sharply since visual aids were adopted in 1945 as a part of the safety education program.

**New Address**—The PURDY CO. of Chicago moved to 8754 Dobson Ave. They are dealers in railroad and contractors equipment; steel products; new and relaying rails; iron, steel scrap.

**Relief In Sight**—To relieve the power shortage in eastern Australia, \$16 million worth of electrical apparatus has been ordered from the WESTINGHOUSE ELECTRICAL INTERNATIONAL CO. The equipment will generate and distribute 110,000 kw of power in the states of New South Wales, Victoria, and Queensland.

**Expansion Program**—An expansion program that will add 8000 sq ft of manufacturing area and increase capacity by more than 50 pct was announced by METAL CARBIDE CORP., Youngstown, Ohio.

**Munition Production** — KILBY STEEL CO., has purchased the idle property of the U. S. Cast Iron Pipe & Foundry Co., Anniston, Ala., for the production of munitions items for the government. The company was awarded a \$5 million contract for the manufacture of ammunition shells.

**Forms New Department** — The PENNSYLVANIA SALT MFG. CO., Philadelphia, has formed a new sales department, the Industrial Chemicals Dept., combining the former heavy chemicals and special chemicals departments.

**Twentieth Plant** — Ground was broken at Succasunna, N. J., for a vertical turbine pump plant of WORTHINGTON PUMP & MACHINERY CORP. Ceremonies were held recently.

## Broader Use of Radioactive Materials by Industry Expected

**Cleveland**—Industry's strengthened interest in radioactive materials was evident here last week at the conference of radioisotopes in industry, co-sponsored by Case Institute of Technology and the Atomic Energy Commission.

T. Keith Glennan, AEC commissioner and president-on-leave of Case Institute, told the broad cross-section of industry represented at the meeting to start an intensive study and discover all possible industrial uses for isotopes in process control, production, testing, and reasearch.

Sessions here gave the 100 conference registrants a new insight into many aspects of isotope use. They discovered that although practical applications are still largely potential, many large-scale industrial processes have taken pioneering steps.

The supply of radioactive materials—most readily available isotopes from nuclear reactors and fission materials left over from plutonium processing—exceed any foreseeable industrial demand.

Mr. Glennan said the surface has not yet been scratched so far as realizing "ultimate potentialities" of isotopes. He advised the meeting that the price an industrial user pays for isotopes today covers only the cost of production not the huge cost of buildings and machines.

The day will come when effective international control of atomic energy will permit revision of tight secrecy on the part of the government, said Mr. Glennan.

## Take 3 More Ships From Tensaw

**Mobile**—Removal of three more ships from the Tensaw River reserve fleet anchorage has raised the total broken out of the reserve fleet, since start of the Korean War, to 62. Two of the Liberty ships recently removed are being reconditioned at Mobile shipyards, and the third is being readied at New Orleans.



## ATF Ships First 76mm Tank Guns; Can Outblast Reds' 88mm

Elizabeth, N. J.—The first large gun produced by a civilian firm since World War II, a 76mm semi-automatic weapon for the new 25-ton General Walker Bulldog light tanks, left the plant of American Type Founders, Inc.

Army spokesmen at ceremonies here last week said deliveries of the 76mm tank gun, which outclasses the Russian 88mm gun, were made in a record-breaking 7 months after orders were placed.

The gun is a 16-ft gyroscopically controlled weapon that can stay on target despite jouncing at high speeds. It can fire in all directions through a 360° circle. Army arsenals built the first two prototypes experimentally and furnished the guide for commercial production at ATF's gun plant which had been built in World War II and was later converted to printing press manufacture.

Last November, the Army began shipments of mothballed machines and machine tools to ATF. After the guns are fitted with additional recoil mechanisms by the National Rubber Machinery Corp., at Clifton, N. J., and are test fired at the Erie Proving Ground, they will finally wind up at the Cleveland tank plant of the Cadillac Div., General Motors Corp.

## NPA Starts Ball Rolling On Industry, Government Scrap Drive

Washington — The NPA-sponsored scrap steel drive has started. (THE IRON AGE, Mar. 15, p. 97.) Industry and government agencies, especially General Services Administration and the Defense Dept., have been asked to weed out all obsolete and worn out metal equipment.

Purchased scrap needs this year will reach at least 3 million tons more than 1950's 29 million tons, said NPA Director Manly Fleischman in announcing the drive.

Farmers are urged to make a spring clean-up of worn-out equipment. Although this is as close

to public participation the program will go, chambers of commerce are asked to appoint task groups for each industrial section to locate overlooked scrap piles.

## Hopes to Complete Labrador Ore Field Railroad in 3 Years

Montreal—With a speed-up in plans, The Iron Ore Co. of Canada, Ltd., hopes to complete the railroad from Labrador-Quebec iron ore deposits to Seven Islands in the St. Lawrence River within the next 3 years instead of four, as previously planned, Jules R. Timmins, president of Labrador Mining & Exploration Co., Ltd., told the annual stockholders' meeting.

W. H. Durrell, Labrador's general manager, reported that 418 million tons of high-grade ore has been outlined and an additional 100 million tons of lower-grade ore had been located which could be beneficiated at 12¢ per ton.

**OUT OF DANGER:** A Utiliscope camera (upper left) scans molten metal as it pours into mold for continuous casting of steel billets. Lower picture shows operator, 50 ft away, watching the telecast at the Babcock & Wilcox Tube Co. plant, Beaver Falls, Pa. Since the mold must always be kept full to an exact level, a man had to be stationed directly at the mold top. The hazard was very high until a Diamond Power Specialty Corp. Utiliscope was installed.



## NPA Rules Inbound Freight Hikes May Not Be Added to Price

Washington — Increases in inbound freight costs may not be added to the seller's ceiling price, the Office of Price Stabilization has ruled. All such cost hikes must be absorbed.

Higher outbound freight costs may be passed on in some cases:

(1) Companies quoting delivered prices during the base period must absorb increases. A seller who quoted the same delivered price to all buyers, or whose delivered prices in different zones did not correspond with actual differences in freight costs, must absorb the increases.

(2) Increases in outbound freight costs may be passed on if a firm quoting f.o.b. prices during the base period added only actual freight costs.

(3) Where the seller quoted an f.o.b. price plus a freight charge which did not represent actual costs incurred, he must absorb any increases.

(4) If a firm sold at a delivered price based on an f.o.b. price adjusted for actual cost of delivery, the increase may be passed on.

(5) A company which sold at a delivered price during the base period may change to an f.o.b. price if he reduces his ceiling prices by the actual freight cost for each purchaser.

## Industry Urged to Develop Engineers to Meet Future Needs

Atlanta—Industry, faced with a serious shortage of engineers, was advised to take a more active part in the development of young engineers by J. Calvin Brown, president of the American Society of Mechanical Engineers.

The current shortage, Mr. Brown said, was created by the Korean situation, the interruption of the flow of engineering graduates during World War II, and the continuing expansion of American economy and production facilities. Higher pay for engineers was recommended.

## BITS AND BRIEFS

—By Bill Packard—

Now is the time for government to solidify wage-price controls, if it's ever going to do it. Present abundant supply of consumer durables, with its accompanying price lull, giving anti-inflation program a chance to get on its feet. If officials miss the boat, they'll be in serious trouble later, with wages creeping up and more people working longer hours, all of which means more purchasing power . . . Five-year tax write offs for defense plants are being welcomed by industrialists with open arms, but some are wondering what will happen to taxes in the sixth year—if business is still good . . . Defense Mobilizer Wilson says year's end will find defense program taking about 15 pct of national production (8 pct last year). He expects defense take to reach a high of 20 pct of national output (45 pct during last war). And he predicts civilian output in 1953 larger than before Korea. Wow! . . . Companies making estimates of future markets making wider use of population and productivity data . . . General Electric planning big expansion of appliance capacity somewhere in the Midwest, maybe Louisville . . . They'll make war goods first, but plants will be built with an eye to conversion . . . Who says illness isn't psychological? Federal Trade Commission, banning use of word "Liver" in Carter's Little Liver Pills, says pills have "no therapeutic value." We always preferred Kentucky spring water or mountain dew, ourselves . . . Freight car program gaining, but so slowly. About 7000 cars made last month; they're talking about 9000 this month. But we think that 10,000-car-per-month goal is still pretty remote . . . International Harvester, R.C.A. Victor and Ford laying off workers, blame material shortages . . . El Paso Natural Gas spending \$92 million in 3 years

to expand service to utility customers in Southwest . . . Scrap quality showing improvement since government inspectors started photographing cars of scrap . . . Will Administration peace-making to get labor back in defense program reduce Wilson's authority?

It's already clear that John L. Lewis has been maneuvered from the main line onto a closed siding. But "ole" John has a way of steaming back onto the main line—smelling like roses . . . There'll be gnashing of teeth by some who now think CMP is a panacea.

## See December Deluge of Cutting Tool Orders

**Manufacturers work three shifts, 7 days, to meet expected rush . . . Most deliveries still being made from stock but some specials require 90 to 95 days . . . Nearly all orders carry DO.**

New York—Makers of cutting tools, abrasives and grinding wheels, are working three shifts 7 days a week to meet the deluge of orders expected to hit 6 months from now.

Dealers and manufacturers are generally well stocked, and orders for standard items are being filled as received. Delivery time on specials and gages is lengthening and deliveries on orders placed in the fourth quarter may be slow.

Some carbide tools delivered in days a year ago, now take 4 to 6 weeks, and delivery on some specials is quoted at 90 to 95 days.

Gage delivery is running 4 to 6

weeks, and, with the brunt of defense ordering yet to come, is expected to worsen considerably. One gagemaker reports gage production five times greater than a year ago.

Hardest items to obtain are bastard gage sizes used in ordinance, of which there is an increasing number. Production of these specials makes normal stock replacement more difficult.

### Most Orders Carry DO

Toughest items in cutting tools are oil hole drills on which deliveries of 12 to 14 weeks are quoted.

Deliveries of standard belt, sheet and roll abrasives are being made from stock, and orders for special belts and discs take the normal 1 month processing time.

Dealers and manufacturers report practically all orders carry a DO number, with many firms ordering under DO-97. Since stocks are still large, these orders are for the most part being filled.

Some businessmen have apparently used DO-97 as a hedge against anticipated future shortages. NPA admits the difficulty of policing the order, but anticipates a growing enforcement staff.

With adequate personnel, NPA expects to make samplings of ordering under DO-97, and will probably apply inventory restrictions under Reg. 1 (Inventory Control).



"He says I haven't a head for business—me, with a mink coat when I was 18—"

## Bar Shortage to Cause Farm Equipment Production Cutbacks

Chicago—A shortage of bars will cause stiff cuts in production of three tractor models and 16 major farm implements by the International Harvester Co. The bar shortage will affect April and May production and shipments to dealers in May and June.

The recent government order giving defense order status to farm equipment makers will have no effect on the situation since it does not go into effect until June. The production setback will be felt in 11 of the company's plants throughout the country.

### Truck Output Also Cut

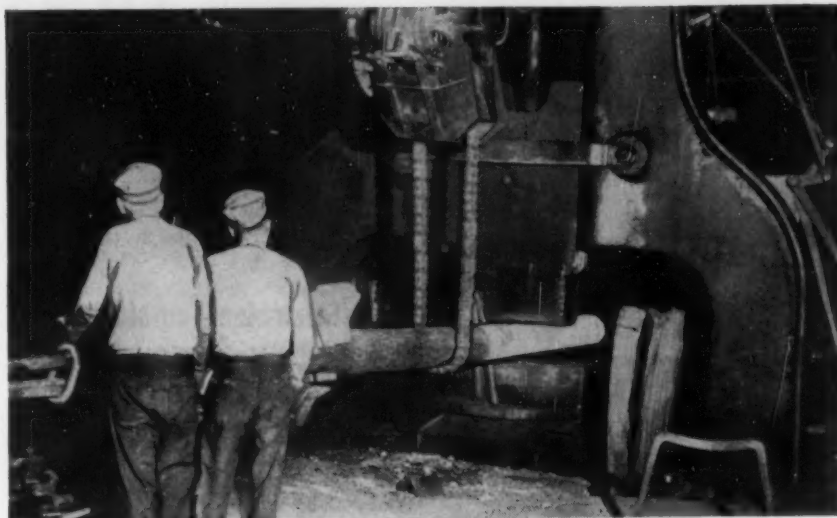
Production in Harvester's major truck division has already been cut by 10,500 trucks for the second quarter. These cuts were all in civilian models. Light truck models were cut by 125 units a day and heavier trucks by 40 units daily. Both bar and sheet steel shortages were responsible for the cutback. Second quarter refrigeration production will be reduced by 31,552 units in the firm's refrigeration division.

## Mallory Co., Sharon Steel Become Partners in Titanium

Indianapolis — Mallory-Sharon Titanium Corp. has been formed on a 50-50 pct interest basis by P. R. Mallory & Co., Inc., this city, and the Sharon Steel Corp., Sharon, Pa. It will produce titanium and its alloys and will offer a series of proprietary alloys to meet industrial and armed forces needs.

Mallory Co. has done titanium research for the past 10 years and for the past five has done development work for the Navy air arm. Sharon's subsidiary, Niles Rolling Mill Co., has experience in rolling large titanium sheets. The firms make a practical combination.

The Mallory-Sharon combination joins previous partnerships: Titanium Metals Corp. (Allegheny Ludlum and National Lead Co.);



WHAM: A 6000-ton drop steam hammer at the Kropp Forge Co. shapes a propeller shaft for a small naval vessel, soon to be part of the fleet guarding 53,000 miles of United States coastline.

Rem-Cru (Remington Arms and Crucible Steel Co.); and Kennecott Copper and N. J. Zinc.

## June Steel Set-Asides Lifted For More DO's and Farm Equipment

Washington—Steelmakers must throw more steel into the defense pot in June. Last week they were instructed by National Production Authority to set aside additional tonnages to cover heavier placement of DO's and to provide more steel for farm equipment.

The percentage reserve for hot-rolled carbon steel bars was boosted from 20 to 35 pct and alloy bars from 45 pct to 50. The following table lists the old and new set-asides:

Carbon Steel Products	Previous Percentage Reserve	June Percentage Reserve
Ingots	5	10
Blooms, slabs, billets	20	25
Tube rounds	30	35
Sheet bars	5	10
Wire rods	20	25
Plates, other	25	30
Bar, hot rolled, other	20	35
Bars, cold finished	25	30
Mechanical tubing	25	35
Low carbon wire	10	11
High carbon wire	15	16
Sheets, hot rolled	25	30
Sheets, cold rolled	15	16
Sheets, galvanized	10	20
Sheets, all other coated	13	16
Strip, hot rolled	12	16

Alloy Steel Products	Previous Percentage Reserve	June Percentage Reserve
Ingots	25	28
Blooms, slabs, billets	45	48
Tube rounds	60	63
Wire rods	45	50
Bars, hot rolled	45	50

## U.S. Steel Does Some Good Relations Spadework for New Mill

Trenton, N. J.—U. S. Steel Co. did some preliminary spadework last week to establish sound community and business relations in the area of the Fairless Works.

Dwight L. Merrell, Philadelphia district manager of sales, talked away fears of air and river pollution and assured his audience of the Trenton Purchasing Agents' Assn. that U. S. Steel was not planning to enlist its work force for the new mill from the displaced person camps of Europe, as rumored.

He said 40 pct or more of U. S. Steel's May output would go to defense and essential programs but that, since much of the government-directed tonnage "actually will go to the same customers to which it has always gone," civilian industry customers will not be limited to 60 pct of ordinary shipments.

## Davenport Steel Expanding

Davenport, Ia.—Davenport Steel Co. here has recently opened an expansion program that will triple the size of facilities. It will then fabricate structural steel and ornamental iron work to meet all demand in its local area, reports Charles R. Roberts, president.



# CONTROLS DIGEST

## Industry Controls This Week:

### NPA Orders

M-1, Ferroalloys use—Controls use, establishes 45-day inventory, and requires monthly melt schedules beginning May 1 for June. Extends some lead times and changes some DO acceptance ceilings. Effective Apr. 6.

M-3, Columbium, tantalum—Use for steel alloys must be approved by Aircraft Production Resources Agency. Controls disposition of scrap. Effective Apr. 6.

M-7, Aluminum use—Order rewritten to incorporate previous changes. Effective Apr. 6.

M-24, Tin, terneplate—Extends use of terneplate and restricts some uses of tin plate. Effective Apr. 3.

M-25, Cans, tin and terneplate—Revises types of plate which may be used, and sets up new quotas. Limits production and establishes manufacturing and delivery preferences. Effective Apr. 6.

M-26, Aluminum closures—Sets up a quota system for packers. Effective Apr. 6.

M-47, Consumer durables—Amendment permits greater flexibility of production within range of products made. Effective Apr. 4.

M-53, Cotton duck—Requires producers to accept DO orders to 80 pct, by weight, of scheduled production.

Supp. 1 to Del. 1, Magnesium—Permits rescheduling of deliveries of magnesium for military aircraft production. Effective Apr. 3.

### OPS Orders

CPR-19, Tungsten—Pegs ceiling price at \$65 per ton.

### DMA Orders

MO-6, Tungsten—Places ores and concentrates under government control. Synthetic scheelite containing 20 pct or more tungsten trioxide is also controlled.

## Curb Columbium-Tantalum Steels

Washington—Henceforth, under amendment of M-3, defense rated orders for columbium and columbium-tantalum-bearing steels for the aircraft program must be approved by the Aircraft Production Resources Agency, a Defense Dept. unit. The order forbids disposition of columbium-bearing scrap for remelting except for use in making columbium-tantalum-bearing steels.

## Quota for Aluminum Closures

Washington—Revision of two NPA orders has shifted control of aluminum closures from the basic order M-7 to M-26 and sets up a quota system for packers.

At present, packers are permitted unlimited use of aluminum covering and sealing items for fluid milk and specified drugs and biologicals. Packers of other drugs and human foods are limited to 100 pct of the base period and packers of all other products are limited to 65 pct.

## More Tin Cans for Must Uses

Washington—First of a series of tin order (M 25) amendments to channel tin cans into more essential uses has been effected as of Apr. 6 and covering the second quarter.

Three major changes are: (1) A more flexible quota system, permitting unused quarterly quotas to be carried over; (2) reduction in quotas, to 75 pct, is made for beer and foods in schedule 1; (3) sets up a preference system in scheduling can orders—first, for rated orders and NPA directives; second, for class A, and third, for class B (as listed in schedule 1).

## NPA Amends Tin-Terne Plate Order

Washington—The NPA has amended its tin and terne plate order (M-24) so as to extend permitted use of terne plate and to restrict the use of tinplate menders resulting from production of electrolytic tin plate.

The order also lifts provisions governing idle and excess tin and terne plate inventories. Increased demand has virtually wiped out all inventories, NPA said.

## M-47 Steel Use Broadened

Washington—The National Production Authority has amended M-47 so as to revise List A in such a manner as to make the 20 pct restriction in steel consumption apply to groups of closely related items rather than to types within the banned categories. The order is further clarified by stating that joining hardware is not considered as "parts" within the meaning of List A.

## New Tungsten Restrictions

Washington—Subject to limited exceptions such as stockpiling or upgrading, a new DMA order (MO-6) supersedes temporary MO-4 covering concentrates only and places both tungsten ores and concentrates under government control.

Turn to Page 127

## Defense Contracts to Metalworking Industry

Selected Contracts, Week of Apr. 9, 1951

Item	Company
Taping machines .....	Vertex Co., New York
Crane shovels .....	Bucyrus-Erie C Co., South Milwaukee
Diesel electric gen. ....	Detroit Diesel Eng. Div., GM Corp., Detroit
Food mixers .....	The Hobart Mfg. Co., Troy, Ohio
Vertical turret lathes .....	The Bullard Co., Bridgeport, Conn.
Batteries .....	The Electric Storage Battery, Washington
Repair parts .....	Allis Chalmers Mfg. Co., Milwaukee
Propellers .....	Curtiss Wright Corp., Propeller Div., Caldwell, N. J.
Generators & regulators ....	Warsaw Elevator Co., Warsaw, N. Y.
Diesel generator sets .....	General Motors Corp., Detroit
Crane machinery .....	M. L. Bayard & Co., Philadelphia
Milling machines .....	Kearney & Trecker Corp., Milwaukee
Grinders .....	Brown & Sharpe Mfg. Co., Providence
Lathes .....	Reed-Prentice Corp., Worcester, Mass.
Compressor .....	Schramm, Inc., West Chester, Pa.
Tractors .....	International Harvester Co., Melrose Park, Ill.
Rooters .....	LeTourneau, Inc., Peoria, Ill.
Truck .....	Autocar Co., Ardmore, Pa.
Semi-trailer .....	The Trailmobile Co., Cincinnati
Jack, pneumatic .....	Hartman Corp., St. Louis
Air compressors .....	Davey Compressor Co., Kent, Ohio
Air compressors .....	Ingersoll-Rand Co., Cincinnati
Trailer parts .....	Gar Wood Industries, Detroit

## SUBCONTRACTORS:

# CAN YOU MAKE IT?

New York—With procurement spending at a rate of \$5 billion per month, and key industries working two and three shifts to keep pace with snowballing defense and essential civilian production, prime contractors are

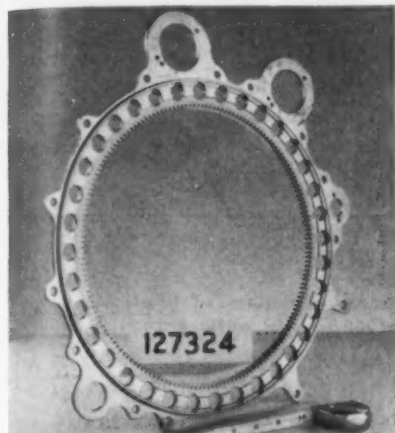
searching for competent subcontractors to help meet production schedules.

While the full effect of defense ordering will not be felt for several months yet, many prime contractors are already experiencing

difficulty finding subcontractors for difficult parts.

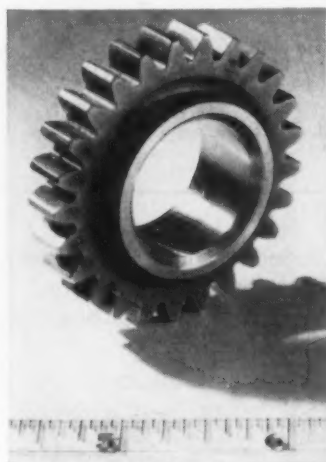
As prime contractors' delivery dates approach, greater strain will be placed on the prime's own facilities and the pressure to "farm-out" parts will increase.

Metalworking shops faced with material shortages can clear the ground work for obtaining defense work by contacting prime contractors listed in "Can You Make It?" columns of THE IRON AGE.



Iron Age SC 9

Machine from Nitralloy forging  
Hardness: Case, Rockwell 15-N, 91.5 min; core, Rockwell C 25-32  
Finish: 32 microinches, RMS  
Backlash: 0.002 in.  
Requirements: 100 per month  
Part No. 127324, Purchasing Dept., Curtiss-Wright Corp., Caldwell, N. J.



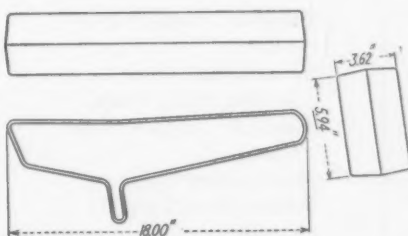
Iron Age SC 18

Machine from AMS 6260 forging.  
Size: Approx. 2 in. x 1/2 in.  
Hardness: Core, C32-40 carburized.  
Case, C77-80, hardened.  
Tolerances: 0.001 in.  
Finish: 16 microinches.  
Requirements: 5000 to 10,000 per month.  
Part No.: 131297, Subcontracting Dept., Wright Aeronautical Corp., Wood-Ridge, N. J.

Send a picture or simple inked sketch of the part to be subcontracted, with the part number, approximate size, tolerances, material, machine work needed, quantity required and address to:

"CAN YOU MAKE IT?" EDITOR  
THE IRON AGE  
100 EAST 42ND STREET  
NEW YORK 17, N. Y.

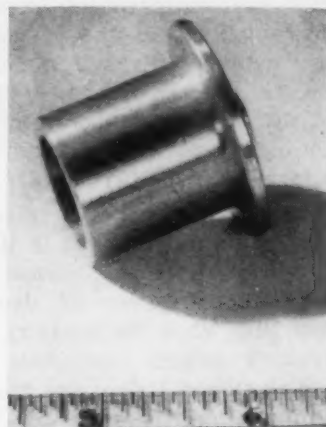
Small manufacturers interested in obtaining defense work are urged to contact the prime contractor directly.



Iron Age SC 2

Die Forging, AMS 4340 steel.  
Spec: AN-QQ-S-756.  
Hardness: 255 Brinell max.  
Normalize and anneal; sandblast and Magnaflux.  
Tolerances: 0 to 0.06 in.  
Quantity: 20; plus 20 similar parts.  
Part No. 85-124-33, H. A. Hoffmann, Jr., PA, East Coast Aeronautics, Inc., 896 So. Columbus Ave., Mt. Vernon, N. Y.

For more information see THE IRON AGE, Mar. 22 p. 92, Mar. 29 p. 111 and Apr. 5 p. 123



Iron Age SC 17

Machine from AMS 4118 Al. Al. bar.  
Size: Approx. 1 1/2 in. x 1 5/8 in.  
Tolerances: 0.001 to 0.010 in.  
Finish: Anodized.  
Requirements: 12,000 to 25,000 per month.  
Part No.: 117692, Subcontracting Dept., Wright Aeronautical Corp., Wood-Ridge, N. J.



Iron Age SC 19

Machine from AMS 6260 bar.  
Hardness: Core, C32-40, carburized.  
Case, 30N77-80, hardened.  
Size: Approx. 1 1/2 in. x 3/4 in.  
Requirements: 6000 to 12,000 per month.  
Part No.: 113442, Subcontracting Dept., Wright Aeronautical Corp., Wood-Ridge, N. J.

## Steel Profits, Taxes, Sales Reach New Highs

**Profits of 26 firms were \$720.9 million in '50, a rise of 40.9 pct over 1949 . . . Stimulus to prosperity was war and high civilian demand . . . Taxes bite deep—By John Delaney.**

Pittsburgh—The year 1950 was a record-breaker for 26 steel producers representing approximately 92 pct of the industry's ingot capacity. Profits, in the aggregate, reached a new high, as did net sales and operating revenues, Federal income taxes, and common dividends declared.

This prosperity was due in large to outbreak of war in Korea last summer. Other factors included a carryover of demand from 1949 when the industry lost about 10 million ingot tons due to the pension strike, and the expanding American economy. New records were established in production and shipments.

### A 40.9 Pct Increase

Net earnings of the 26 companies were \$720.9 million, as compared to \$511.5 in 1949, an increase of 40.9 pct. Net sales and operating revenues were \$9.09 billion, against \$7.1 billion the previous year, up 27.4 pct. Net income in relation to sales was 7.9 pct, an increase of 9.7 pct over the 1949 figure of 7.2 pct. Net income pct of investment rose from 9.5 pct to 12.4 pct, an increase of 30.5 pct.

Ingot production was approximately 90 million tons, and shipments were an estimated 67.5 million tons, representing increases of 25.5 pct and 25.7 pct, respectively. Ingot capacity was up 6.0 pct with more on the way.

### Uncle Sam Gets Share

The 26 companies took a severe tax jolt from Uncle Sam's Dept. of Internal Revenue, which put the bee on them for \$744.8 million, a whopping increase of 103.5 pct over the 1949 take of \$365.9 million. The reason: normal and surtax rates were increased, and an excess profits tax was enacted Jan. 3, 1951, retroactive to Jan. 1, 1950.

U. S. Steel Corp. estimated that these increases reduced profits by \$50 million.

While earnings in the aggregate set a record, this did not necessarily apply to all companies individually. For example, U. S. Steel Corp. earned \$271.5 million in

tories, and higher cash requirements, working capital of the 26 companies jumped from \$1.8 billion in 1949 to \$3.5 billion in 1950, an increase of 82.8 pct.

Funded debt was up 6.5 pct—from \$632.2 million to \$673.2 million. Surplus rose from \$2.2 billion to \$2.7 billion, an increase of 21.2 pct. Capital per ton of ingot capacity increased 1.9 pct—from \$61.15 to \$62.24.

The war in Korea was a shot in the arm to the industry. When the shooting began, the pent-up demand for steel was largely

### The Top Twelve

Pittsburgh—Net income, in thousands of dollars, of 12 steel companies rated in order of reported 1950 profits, with pct of change from 1949 is as follows:

Company	1950	1949	Pct of change
U. S. Steel Corp.....	\$215,464	\$165,909	+ 29.9
Bethlehem Steel Corp....	122,976	99,284	+ 23.9
Republic Steel Corp.....	63,795	46,142	+ 38.3
National Steel Corp.....	57,815	39,311	+ 47.1
Armco Steel Corp.....	47,001	30,918	+ 52.0
Youngstown Sheet & Tube Co. ....	40,616	31,777	+ 27.8
Jones & Laughlin Steel Corp. ....	39,744	22,248	+ 78.6
Inland Steel Co.....	38,016	25,004	+ 52.0
Wheeling Steel Corp.....	18,315	7,896	+ 13.2
Allegheny Ludlum Steel Corp. ....	9,815	1,967	+399.0
Sharon Steel Corp.....	9,285	3,326	+179.2
Detroit Steel Corp.(*)....	8,943	.....	.....

(\*) Detroit Steel acquired Portsmouth Steel Co. in 1950. No comparable figure was available for 1949.

1916, and \$224.2 million in 1917, when taxes were inconsequential compared with present rates.

Common stockholders shared in the prosperity. The steel producers took care of their investors to the tune of \$253.0 million, an increase of 49.8 pct over the \$168.8 million paid out in 1949. This is in keeping with industry's increasing awareness of the stockholder, whose dollars are urgently needed to help finance expansion.

Invested capital was up 7.9 pct, from \$5.3 billion in 1949 to \$5.8 billion last year.

Reflecting the increase in production and sales, higher inven-

tories, and higher cash requirements, working capital of the 26 companies jumped from \$1.8 billion in 1949 to \$3.5 billion in 1950, an increase of 82.8 pct.

As is inevitable, the war touched off a "scare" buying spree that boosted the industry's production rate to as much as 103 pct of capacity during the last half of the year. The industry operated at a 98.5 pct clip in the 6-month period, winding up the year with a rate of 96.7 pct. Defense buying had little to do with this spurt.

At year-end, the industry was off on a spree of its own—an expansion spree encouraged by accelerated plant amortization.



# THE IRON AGE Financial Analysis

COMPANY	Year	Ingot Capacity Net Tons	Ingot Production Net Tons	Percent of Capacity Operated	Steel Shipments Net Tons	Net Sales and Operating Revenue	Provision for Federal Income Taxes	Net Income	Net Income Percent of Sales	Number of Common Shares Outstanding	Earnings Per Common Share
U. S. Steel Corp.	1950	33,900,000	31,457,000	98.2	22,635,000	\$2,956,406,146	\$234,000,000	\$215,464,142	7.3	26,109,756	\$7.29
	1949	32,000,000	25,807,000	82.5	18,212,000	2,301,685,689	126,000,000	165,908,829	7.2	26,109,756 <sup>13</sup>	5.39
Bethlehem Steel Corp.	1950	15,000,000	15,116,456	100.8	10,933,296	1,445,404,331	122,000,000	122,976,071	8.5	9,582,942	12.15
	1949	14,200,000	12,596,949	88.7	9,217,188	1,271,040,076	66,500,000	99,283,539	7.8	9,582,942	9.68
Republic Steel Corp.	1950	8,967,000	8,551,013	98.3	6,388,157	881,753,328	79,200,000	63,794,711	7.2	5,896,719	10.53
	1949	8,700,000	6,804,020	79.1	5,123,608	651,952,835	35,000,000	46,142,323	7.1	5,893,103	7.54
Jones & Laughlin Steel Corp.	1950	4,846,500	4,944,000	102.0	3,844,000	487,451,000	33,850,000	39,744,000	8.2	2,600,327	14.72
	1949	4,816,500	4,170,432	87.0	3,042,296	386,046,149	13,150,000	22,248,000 <sup>12</sup>	5.80	2,600,327	7.99
National Steel Corp.	1950	4,500,000	.....	.....	.....	537,024,673	61,100,000	57,814,974	10.77	7,362,045	7.80
	1949	4,200,000	.....	.....	.....	424,892,845	37,400,000	39,311,269	9.25	2,453,950	10.00
Armco Steel Corp. <sup>3</sup>	1950	4,330,000	3,958,727	91.4	2,976,293	439,296,931	48,173,228	47,000,505	10.70	3,954,333	11.70
	1949	3,793,000	3,131,020	82.5	2,389,103	341,350,147	19,315,315	30,918,202	9.06	3,909,352	7.60
Youngstown Sheet & Tube Co.	1950	4,250,000	4,124,781	101.0	3,031,676	409,898,010	33,820,000	40,616,403	10.1	3,350,016	12.10
	1949	4,082,000	3,478,259	85.2	2,550,380	338,344,004	19,894,000	31,777,010	9.49	1,675,008	9.40
Inland Steel Co.	1950	3,750,000	3,675,707	102.8	3,318,149 <sup>18</sup>	461,376,600	41,224,700	38,015,676	8.2	4,899,315	7.70
	1949	3,400,000	3,019,655	88.8	2,715,398 <sup>18</sup>	347,640,710	15,935,000	25,013,707	7.2	4,899,315	5.10
Wheeling Steel Corp.	1950	1,800,000	1,636,475	94.7	.....	186,723,442	17,342,000	18,314,517	9.81	1,423,897	11.50
	1949	1,536,000	1,227,600	79.92	.....	144,382,844	5,819,000	7,896,265	5.47	569,559	4.20
Colorado Fuel & Iron Corp. <sup>5</sup>	1950	1,472,000	1,198,531	81.42	1,115,504	112,642,939	2,704,300	4,406,226	3.91	1,191,096	3.30
	1949	1,472,000	1,446,693	98.28	1,348,138	138,344,200	6,059,200	10,182,919	7.36	1,145,355	8.40
Sharon Steel Corp.	1950	1,441,400	1,448,978	100.5	1,047,795	136,120,769	9,945,000	9,284,643	6.8	925,863	10.00
	1949	1,441,400 <sup>14</sup>	1,001,625	69.4 <sup>14</sup>	738,584	90,068,564	1,650,000	3,325,964	3.7	617,242	3.30
Crucible Steel Co. of America	1950	1,153,455	.....	.....	.....	147,705,329	8,200,523	6,311,254	4.27	488,680	9.70
	1949	1,112,984	.....	.....	.....	99,393,228	351,827	1,352,764	1.36	488,680	Non
Pittsburgh Steel Co.	1950	1,072,000	1,074,340	100.22	1,001,297	119,185,237	6,510,000	6,350,410	5.33	931,048	6.10
	1949	1,072,000	717,253	66.91	595,486	80,559,351	624,000	844,810	1.05	508,917	.....
Barium Steel Corp.	1950	893,000 <sup>22</sup>	471,095	54.0	414,416	53,523,876	1,752,942	1,474,226	2.8	2,223,402	.....
	1949	406,000	186,485	45.9	131,414	33,885,546	809,463	711,452	2.1	2,183,769	.....
Allegheny Ludlum Steel Corp.	1950	832,360	701,569	85.5	617,710	177,961,693	10,250,000	9,814,891	5.52	1,320,651	7.90
	1949	760,360 <sup>6</sup>	362,813	57.8	328,000 <sup>6</sup>	105,863,359	1,200,000	1,967,324	1.9	1,288,831	1.10
Lukens Steel Co.	1950	675,000	621,761	92.1	439,067	52,935,861	1,505,834	1,922,037	3.63	317,976	6.00
	1949	675,000	545,253	80.8	306,450	55,825,306	1,640,330	1,930,045	3.46	317,976	6.80
Detroit Steel Corp.	1950	660,000	653,983	99.1	805,689	92,949,234	8,615,770	8,943,140	9.6	1,185,793	7.50
Portsmouth Steel Co. <sup>19</sup>	1949	660,000	511,647	77.5	326,386	49,744,601	3,012,000	4,885,424	9.8	1,262,275	1.10
Cranite City Steel Co.	1950	620,000	681,510	109.9	555,858	60,234,883	5,420,000	5,727,406	9.6	497,201	11.50
	1949	620,000	531,824	85.8	464,131	46,496,523	1,890,000	2,958,109	6.36	397,787	7.40
Copperweld Steel Co.	1950	554,400	.....	.....	.....	55,596,047	1,800,000	2,572,539 <sup>10</sup>	4.6	514,864	4.50
	1949	554,400	.....	.....	.....	42,708,329	900,000	1,737,506	4.1	514,864	3.50
Alan Wood Steel Co.	1950	550,000	485,607	88.3	337,415	44,954,826	1,745,000	2,546,902	5.7	562,202	3.50
	1949	550,000	381,710	69.4	270,803	35,895,460	1,480,000	2,255,840	6.3	507,889	3.50
Rotary Electric Steel Co.	1950	425,000	382,764	90.1	307,433	31,103,586	1,910,000	2,150,170	6.9	193,676	11.50
	1949	420,000	247,350	58.9	213,976	16,865,512	955,000	1,287,063	7.6	193,676	8.50
The Midvale Co.	1950	417,624	.....	.....	.....	11,394,397	None	51,143	0.45	600,000	9.50
	1949	449,950	67,647	15.0	.....	13,739,443	None	1,094,387	8.0	600,000	7.50
Continental Steel Corp.	1950	394,000	372,138	94.5	282,802	36,428,123	3,220,000	2,660,153	7.30	501,361	8.50
	1949	364,000	239,736	65.9	178,805	22,505,562	785,000	636,716	2.83	501,364	4.50
Laclede Steel Co.	1950	397,845	360,668	90.7	332,426	39,615,464	3,383,000	3,222,475	8.1	206,250	13.50
	1949	326,025	283,488	87.8	263,862	31,209,110	1,815,000	2,718,352	8.7	206,250	13.50
Keystone Steel & Wire Co.	1950	325,000	342,489	105.4	295,686	43,206,187	5,609,721	6,477,387	14.99	1,875,000	3.50
	1949	302,400	308,131	101.9	276,683	36,735,489	2,600,053	5,084,181	13.84	1,875,000	3.50
Northwestern Steel & Wire Co. <sup>4</sup>	1950	321,000	282,974	88.2	237,790	31,670,308	1,590,000	2,416,222	7.6	817,825	2.50
	1949	321,000	288,814	90.0	231,193	28,564,916	1,195,000	2,243,938	7.9	817,825	2.50
GRAND TOTAL	1950	93,547,584	90,000,000 <sup>2</sup>	96.7 <sup>20</sup>	67,500,000 <sup>21</sup>	9,092,178,684	744,872,918	720,900,698	7.9	79,532,238	.....
	1949	88,235,019 <sup>6</sup>	71,700,000	81.0	53,705,000	7,134,776,400	365,980,188	511,527,164	7.2	71,121,012	.....
Percent change 1950 over 1949		+6.0	+25.5	+19.1 <sup>20</sup>	+25.7 <sup>21</sup>	+27.4	+103.5	+40.9 <sup>6</sup>	+9.7	+11.8	.....

1. Payable after one year.

2. Estimated, based on national operating rate.

3. Including domestic and Canadian subsidiaries.

4. Fiscal years ended July 31.

5. Fiscal years ended June 30.

6. Revised.

7. In addition to 5 pct stock dividend.

8. Two 5 pct dividends declared.

9. Includes \$256,514 (25,651-9/20 shs.) common stock and scrip issuable in 1950 for stock dividends declared in 1949.

10. In 1950 a prior year's depreciation adjustment of \$353,498 was credited to income.

11. Before 2 for 1 stock split in September.

12. Adjusted to reflect depreciation and

13. Based upon shares outstanding after

14. Revised Jan. 1, 1950.

15. Restated by reducing previously shown effect of 50 pct stock dividend 1950.

# Financial Analysis of the Steel Industry

Provision or Federal Income Taxes	Net Income	Net Income Percent of Sales	Number of Common Shares Outstanding	Earnings Per Common Share	Common Dividends Declared	Number of Preferred Shares Outstanding	Preferred Dividends Declared	Funded Debt <sup>1</sup>	Preferred Stock	Co S
4,000,000	\$215,464,142	7.3	26,109,756	\$7.29	\$92,689,633	3,602,811	\$25,219,677	\$61,782,446	\$360,281,100	\$870
6,000,000	165,908,829	7.2	26,109,756 <sup>13</sup>	5.39 <sup>13</sup>	56,135,975	3,602,811	25,219,677	65,944,114	360,281,100	870
2,000,000	122,976,071	8.5	9,582,942	12.15	39,290,062	933,887	6,537,209	166,064,000	93,388,700	303
6,500,000	99,283,539	7.8	9,582,942	9.68	22,999,060	933,887	6,537,209	169,564,000	93,388,700	303
9,200,000	63,794,711	7.2	5,896,719	10.53	25,050,665	282,043	1,692,258	47,461,903	28,204,300	135
5,000,000	46,142,323	7.1	5,893,103	7.54	17,677,492	282,043	1,692,558	58,966,653	28,204,300	135
3,850,000	39,744,000	8.2	2,600,327	14.72 <sup>6</sup>	7,148,000	293,568	1,468,000	71,771,000	29,357,000	103
3,150,000	22,248,000 <sup>12</sup>	5.8 <sup>6</sup>	2,600,327	7.99	6,595,000 <sup>6</sup>	293,568	1,467,840	60,461,497	29,356,800	103
4,100,000	57,814,974	10.77	7,362,045	7.85	20,917,690	None	None	40,000,000	None	73
17,400,000	39,311,269	9.25	2,453,950	16.02	13,481,585	None	None	40,000,000	None	61
18,173,228	47,000,505	10.70	3,954,333	11.76	15,701,546	182,344	880,609	60,920,000	18,234,400	39
19,315,315	30,918,202	9.06	3,909,352	7.68	9,767,996	200,000	899,787	64,290,000	20,000,000	39
13,820,000	40,616,403	10.1	3,350,016	12.12	10,050,048	None	None	28,500,000	None	103
19,894,000	31,777,010	9.49	1,675,008	9.49 <sup>11</sup>	10,050,048	None	None	30,000,000	None	103
41,224,700	38,015,676	8.2	4,899,315	7.76	17,147,603	None	None	69,250,000	None	62
15,935,000	25,013,707	7.2	4,899,315	5.11	14,697,945	None	None	71,250,000	None	62
17,342,000	18,314,517	9.81	1,423,897	11.59	2,776,235	361,436 <sup>17</sup>	1,813,755 <sup>17</sup>	38,812,000	36,143,600 <sup>17</sup>	37
5,819,000	7,896,265	5.47	569,559	4.27 <sup>16</sup>	2,278,236	363,166	1,815,830	40,950,000	36,316,600	29
2,704,300	4,406,226	3.91	1,191,096	3.30	1,752,341	428,495	477,127	14,437,500	8,587,929	5
6,059,200	10,182,919	7.36	1,145,355	8.46	2,281,524	477,128	490,954	11,687,500	9,554,333	5
9,945,000	9,284,643	6.8	925,863	10.03	2,854,743	None	None	8,500,000	None	9
1,650,000	3,325,964	3.7	617,242	3.59 <sup>15</sup>	1,234,482	None	None	9,200,000	None	6
8,200,523	6,311,254	4.27	488,680	9.73	None	310,574	1,941,069	22,345,000	31,057,400	12
351,827	1,352,764	1.36	488,680	None	None	310,575	1,168,641	23,255,000	31,057,500	12
6,510,000	6,350,410	5.33	931,048	6.13	None	120,265	781,831	5,513,908	12,026,500	2
624,000	844,810	1.05	508,917	.043	None	164,382	945,582	6,466,560	16,438,200	4
1,752,942	1,474,226	2.8	2,223,402	.66	None	None	None	None	None	2
809,463	711,452	2.1	2,183,769	.33	See Note	None	None	None	None	2
10,250,000	9,814,891	5.52	1,320,651	7.07	3,240,607	100,285	476,454	4,000,000	10,028,500	8
1,200,000	1,967,324	1.9	1,288,831	1.15	2,577,662	107,383	483,242	None	10,738,300	8
1,505,834	1,922,037	3.63	317,976	6.04	620,053	None	None	2,870,000	None	3
1,640,330	1,930,045	3.46	317,976	6.07	333,875	None	None	3,509,000	None	3
8,615,770	8,943,140	9.6	1,185,793	7.54	2,371,586	None	None	14,475,000	None	1
3,012,000	4,885,424	9.8	1,262,275	3.87	1,893,412	None	None	None	None	1
5,420,000	5,727,406	9.6	497,201	11.52	1,888,877	None	None	5,133,333	None	1
1,890,000	2,958,109	6.36	397,787	7.44	764,976	None	None	1,243,292	None	8
1,800,000	2,572,539 <sup>10</sup>	4.6	514,864	4.88 <sup>10</sup>	1,029,728	22,830	58,033	1,710,000	1,141,500	2
900,000	1,737,506	4.1	514,864	3.24	1,133,701	24,320	67,058	None	1,216,000	2
1,745,000	2,546,902	5.7	562,202	3.92	336,558 <sup>7</sup>	67,500	340,908	5,617,000	6,750,000	5
1,480,000	2,255,840	6.3	507,889	3.76	See Note 8	68,863	346,190	6,300,000	6,886,300	5
1,910,000	2,150,170	6.9	193,676	11.10	387,352	None	None	2,000,000	None	10
955,000	1,287,063	7.6	193,676	6.65	290,421	None	None	3,000,000	None	10
None	51,143	0.45	600,000	0.09	See Note 23	None	None	None	None	10
None	1,094,387	8.0	600,000	1.82	None	None	None	None	None	10
3,220,000	2,660,153	7.30	501,361	5.31	1,654,491	None	None	None	None	7
785,000	636,716	2.83	501,364	1.27	752,046	None	None	None	None	7
3,383,000	3,222,475	8.1	206,250	15.62	1,113,750	None	None	2,042,313	None	4
1,815,000	2,718,352	8.7	206,250	13.18	1,031,250	None	None	2,177,983	None	4
5,609,721	6,477,387	14.99	1,875,000	3.45	3,843,750	None	None	None	None	2
2,600,053	5,084,181	13.84	1,875,000	2.71	1,875,000	None	None	None	None	2
1,590,000	2,416,222	7.6	817,825	2.95	None	None	None	None	None	4
1,195,000	2,243,938	7.9	817,825	2.74	1,022,282	None	None	None	None	4
44,872,018	720,900,698	7.9	79,532,238	.....	252,979,068	6,706,038	41,686,930	673,205,403	635,200,929	1,830
165,980,188	511,527,164	7.2	71,121,012	.....	168,872,968	6,828,126	41,134,568	632,265,599	643,438,133	1,801
+103.5	+40.9 <sup>6</sup>	+9.7	+11.8	.....	+49.8	-1.8	+1.3	+6.5	-1.3	.....

Common stock and  
dividends declared in  
1950 of \$353,498

11. Before 2 for 1 stock split in September 1950.
12. Adjusted to reflect depreciation and maintenance.
13. Based upon shares outstanding after 3 for 1 stock split.
14. Revised Jan. 1, 1950.
15. Restated by reducing previously reported amounts 1/3 to show effect of 50 pct stock dividend declared and paid in 1950.

16. Restated to give effect to 2 for 1 stock split 4/28/50 and 25 pct stock dividend 10/25/50.
17. After stock in treasury—1950, 1730 shs.
18. Includes finished steel from purchased semi-finished.
19. Portsmouth Steel acquired by Detroit Steel in 1950.
20. National rate for entire industry by AISI.

# Industry, 1950-1949

DATA COVER OPERATIONS OF 26 COMPANIES  
REPRESENTING 92 PCT OF THE INGOT CAPAC-  
ITY OF THE UNITED STATES AS OF JAN. 1, 1951

Preferred Stock	Common Stock	Surplus	Invested Capital	Working Capital	Capital per Ton of Ingot Capacity	Net Income Percent of Investment	Year	COMPANY
\$1,100	\$870,325,200	\$784,561,702	\$2,076,950,448	\$441,818,453	\$61.27	10.4	1950	U. S. Steel Corp.
\$1,100	870,325,200	687,006,870	1,983,557,284	483,843,683	61.99	8.5	1949	
\$8,700	303,459,830	414,796,647	977,709,177	401,180,783	65.18	13.1	1950	Bethlehem Steel Corp.
\$8,700	303,459,830	337,348,399	903,760,929	382,411,733	63.65	11.5	1949	
\$4,300	135,979,066	227,794,948	439,440,217	163,412,671	49.01	14.9	1950	Republic Steel Corp.
\$4,300	135,979,066	190,743,325	413,893,344	156,087,187	47.57	11.6	1949	
\$57,000	103,937,000	172,171,000	377,236,000	122,760,000	77.84	11.0	1950	Jones & Laughlin Steel Corp.
\$56,800	103,936,900	130,771,940	324,527,137	96,422,995	67.38	7.2	1949	
one	73,620,450	218,108,598	331,066,167	161,290,805	73.57	17.8	1950	National Steel Corp.
one	61,348,750	193,480,944	294,829,694	129,042,022	70.20	13.8	1949	
\$4,400	39,543,331	170,246,663	288,944,394	109,202,059	66.73	16.94	1950	Armco Steel Corp.
\$0,000	39,093,522	138,514,143	261,897,665	107,211,797	69.05	12.58	1949	
one	105,088,053	168,167,993	301,756,046	177,916,102	71.00	14.4	1950	Youngstown Sheet & Tube Co.
one	105,088,053	137,601,638	272,689,691	166,936,851	66.80	12.5	1949	
one	62,500,000	137,895,532	275,631,279	127,736,143	73.50	14.5	1950	Inland Steel Co.
one	62,500,000	105,877,459	256,763,206	115,634,562	75.52	10.5	1949	
\$3,600 <sup>17</sup>	37,021,322	57,646,244	169,623,166	62,450,045	94.24	11.61	1950	Wheeling Steel Corp.
\$6,600	28,477,950	52,451,413	158,195,963	52,176,175	102.99	5.86	1949	
\$87,929	5,955,480	53,402,257	82,383,166	28,991,963	57.39	5.98	1950	Colorado Fuel & Iron Corp.
\$4,333	5,726,775	50,439,830	77,408,438	24,998,094	52.59	13.31	1949	
one	9,319,020	37,827,943	55,646,963	32,233,323	38.61	17.2	1950	Sharon Steel Corp.
one	6,232,810	34,484,252	49,917,062	24,392,742	34.63	7.2	1949	
\$57,400	12,216,998	29,491,047	95,639,334	35,414,630	82.91	7.40	1950	Crucible Steel Co. of America
\$57,500	12,217,014	25,120,762	92,304,721	30,591,490	82.93	2.32	1949	
\$26,500	7,044,845	34,468,851	59,054,104	24,581,146	55.09	11.21	1950	Pittsburgh Steel Co.
\$8,200	4,862,190	26,419,227	54,186,177	21,680,466	50.55	1.54	1949	
one	2,223,402	12,810,741	15,034,143	4,873,158	16.84	9.8	1950	Barium Steel Corp.
one	2,183,769	11,112,194	13,295,963	4,589,943	32.75	5.4	1949	
\$28,500	8,254,069	42,419,010	60,701,579	29,987,914	72.93	16.17	1950	Allegheny Ludlum Steel Corp.
\$8,300	8,055,194	33,865,906	52,659,400	21,946,677	69.26 <sup>6</sup>	3.7	1949	
one	3,179,760	17,721,101	23,770,861	14,301,561	35.22	8.1	1950	Lukens Steel Co.
one	3,179,760	16,419,117	23,107,877	12,234,632	34.23	8.4	1949	
one	1,185,793	24,397,203	25,582,996	14,882,754	38.76	36.5	1950	Detroit Steel Corp.
one	1,262,275	20,422,673	21,750,173	12,678,900	32.95	22.5	1949	
one	11,027,243	15,077,196	32,137,772	15,176,208	51.84	17.82	1950	Granite City Steel Co.
one	8,823,031	10,083,709	21,050,032	6,774,084	33.95	14.05	1949	
\$11,500	2,574,320	13,316,680	18,742,500	9,878,693	33.81	13.9	1950	Copperweld Steel Co.
\$6,000	2,574,320	11,830,017	15,620,337	9,014,436	28.18	11.1	1949	
\$50,000	5,622,020	10,679,808	28,668,828	5,855,838	52.13	10.1	1950	Alan Wood Steel Co.
\$6,300	5,335,404 <sup>9</sup>	9,026,310	27,548,014	5,377,744	50.09	9.4	1949	
one	1,936,760	6,919,348	10,856,108	2,293,936	25.54	20.8	1950	Rotary Electric Steel Co.
one	1,936,760	5,156,530	10,093,290	2,997,407	24.03	13.2	1949	
one	10,574,621	5,751,568	16,326,189	9,862,083	39.09	0.31	1950	The Midvale Co.
one	10,574,621	5,209,518	15,784,139	9,875,615	35.08	....	1949	
one	7,018,789	8,965,065	15,983,854	5,407,788	40.57	16.6	1950	Continental Steel Corp. <sup>19</sup>
one	7,018,845	7,959,404	14,978,249	7,244,386	41.15	4.3	1949	
one	4,125,000	8,539,658	14,706,971	7,142,287	36.97	22.38	1950	Laclede Steel Co.
one	4,125,000	6,430,933	12,733,916	6,009,712	39.06	21.92	1949	
one	2,604,167	16,611,868	19,216,035	7,240,870	59.13	33.71	1950	Keystone Steel & Wire Co.
one	2,604,167	13,978,231	16,582,398	5,712,980	54.84	30.66	1949	
one	4,089,125	5,088,273	9,177,398	3,448,604	28.59	26.3	1950	Northwestern Steel & Wire Co. <sup>4</sup>
one	4,089,125	2,672,051	6,761,176	2,783,831	21.06	33.1	1949	
\$0,929	1,830,425,664	2,694,876,944	5,821,985,695	3,463,852,530	62.34 <sup>24</sup>	12.4 <sup>24</sup>	1950	GRAND TOTAL
\$8,133	1,801,010,331	2,223,076,568	5,395,896,275	1,898,501,305	61.15	9.5 <sup>24</sup>	1949	
1.3	+1.6	+21.2	+7.9	+82.8	+1.9 <sup>6</sup>	+30.5 <sup>24</sup>		Percent change 1950 over 1949

at 4/28/50

21. Estimated.

22. Company acquired Phoenix Iron & Steel Co. in 1949 but new capacity 450,000 tons inoperative until Mar., 1950.

23. Ten pct stock dividend.

24. Approximate.

Italics indicate loss.

ished.  
in 1950.

THE IRON AGE, April 12, 1951





## Essential Jobs List Cut By Commerce Dept. to 25 Industries

Washington—The essential activities list to guide policy in granting military deferments has been boiled down to 25 industrial groupings by the Commerce Dept. It eliminates more than 50 classifications contained in last summer's original list.

Industries now included were selected on a basis of importance to defense or minimum civilian needs, shortage areas, and where employment must be increased or maintained.

The new list is confined to production and maintenance of military commodities within the following groupings: aircraft and parts, ships and boats, ordnance, wood products, communications equipment, leather and its products, and transportation equipment.

Among the broad industrial categories are: metal and non-metallic mining and milling, smelting, refining and processing of metal, scrap salvage, machinery and equipment, chemicals and allied products, rubber and its products, stone, clay, and glass products, petroleum and its products, natural gas, coal products, industrial services, transportation services, power, water supply.

A revision of the critical occupation list is expected soon.

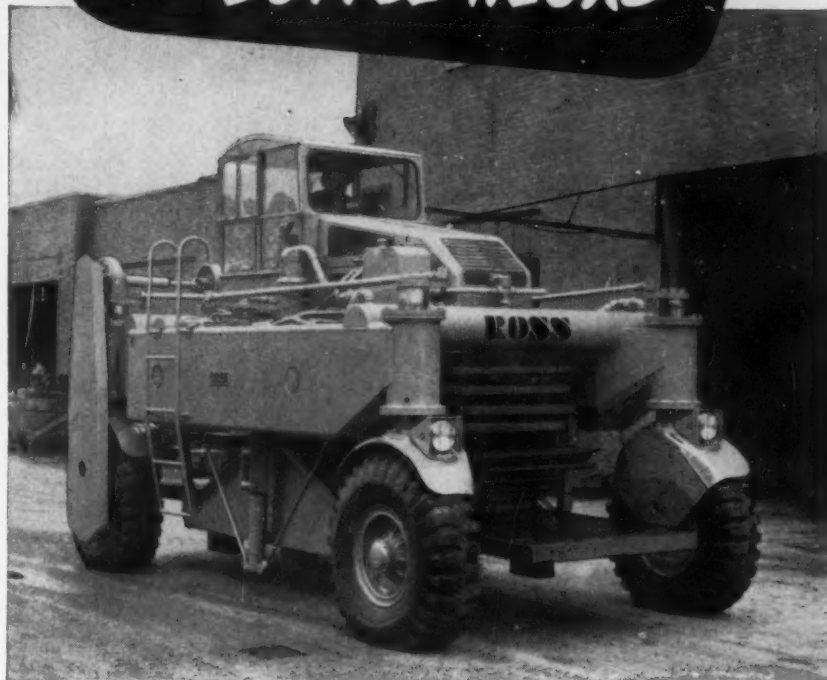
## Allocate Copper for Power

Washington—A second-quarter allocation of 92.7 million lb of copper for use of the electric power industry has been ordered by NPA. Addition of copper wire, brass mill products, and foundry items, to the power program was contained in an amendment to M-50 which set up a similar program with respect to aluminum.

A DO-48 rating may now be applied for specified products for maintenance, repair, operation and minor requirements. Quarterly quotas are limited to 18¾ pct of gross weight of copper used in 1950 or 75 pct of the amount used during the same quarter last year.

April 12, 1951

# ELIMINATE STEEL HANDLING BOTTLE NECKS



## ROSS Series 100 CARRIER ...simplest mass handling method known!

Now...you can move 45,000-pound payloads of billets, bars, plate, in-process and finished steel *where* you want them *when* you want them...at a moment's notice!

Now...you can be free of the restrictions of a plant railroad handling system...its expensive trackage, cars, locomotives...costly, time-consuming switching operations!

Now...you can prevent congestion in the mill...free more mill space for production operations...eliminate costly re-handling...save time and money in getting out current orders!

How? With Ross Series 100...the *only* Carriers designed and built all the way through for rough, tough steel mill service...the *only* Carriers with that great reserve strength steel men demand. Self-loading and unloading, Ross Series 100 requires only a driver...and moves capacity loads at speeds up to 33 mph.

Don't overlook the outstanding advantages of the Ross Carrier Steel Handling Method...ASK STEEL MEN WHO KNOW! Get full details on Ross Series 100 Carrier...a 'phone call, wire or letter will do it.



## THE ROSS CARRIER COMPANY

Direct Factory Branches and Distributors Throughout the World

425 Miller St., Benton Harbor, Michigan, U.S.A.

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ANYTHING BE  
MORE CONVINCING  
THAN YOUR OWN  
EXPERIENCE?

Then give HERC-ALLOY the toughest chain job in your plant. Our asking for this test reflects the confidence given us by HERC-ALLOY service records from industry's leading plants.



**HERC-ALLOY** is America's **first alloy** steel chain. For slings or other applications **HERC-ALLOY** Chain will prove that efficiency, safety and economy can go hand-in-hand.

## COLUMBUS MCKINNON

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#### • News of Industry •

### Canada's Minister of Mines Submits Plan to Curb Ore Exports

Victoria, Canada — R. C. MacDonald, Minister of Mines, has renewed his long campaign to curb exports of iron ore from British Columbia. He has placed a plan before the provincial cabinet to limit to 1 million tons exports from any one source.

If he is successful he may halt operations of the Argonaut Co., an American operation, which is planning to export ore from Vancouver Island's Quinsam Lake deposits. Another important deposit of ore which may be affected is that on Texada Island in the Straits of Georgia.

### Ore Slated for Japan

Mr. MacDonald holds more aces than previously. The provincial government favors building up of an iron ore industry in British Columbia and possibilities of a major steel mill in the area have been discussed with Federal authorities.

American companies have been seeking B. C. ore to fill increasing Japanese demand. Mr. MacDonald said ore from several of the best smaller deposits was being prepared for export to Japan soon. He also pointed out that Vancouver Rolling Mills is boosting capacity from 30,000 to 40,000 tons annually and now uses scrap as raw material. Expanded capacity will depend on smelting ore in the province—or importing steel ingots.

### Daily Aluminum Output Rises

New York—Average daily production of primary aluminum rose 2 pct during February though total production was under the January figure, according to the Aluminum Assn. Output totaled 125,480,017 lb compared with 135,907,016 lb during January.

Sheet and plate shipments totaled 94,735,970 lb compared with 112,070,040 lb in January. Shipments of permanent mold rough castings, except pistons, totaled 3,097,221 lb compared with 3,769,628 lb in January.



## Second, Third Shifts Grow As Industry Gears for Defense Work

Report shows 37 pct of workers now on night duty . . . Limit seen.

Washington—Key metalworking industries, including automobile, aircraft, parts, tin can, and steel forgings, are running two and three shifts to meet expanding defense and essential production.

More than one shift is common among metalworking industries but a special Labor Dept. survey shows the industries named are assigning up to 37 pct of production personnel to extra shifts.

Half of the 6000 plants surveyed operated on a more than one shift basis. About a seventh of the firms reporting have instituted a third shift although only about 4 pct of total employment were assigned to the third trick.

No appreciable expansion in the third and second shift operations is foreseen for the near future, the Dept. said. Most specialized machinery is already on 24-hr operation. There is a scarcity of materials and manpower for increased operation of the more standardized equipment.

## Steel Founders' Scrap Drive

Cleveland—A national conservation drive to ease the shortage of iron and steel scrap has been instituted throughout the steel casting industry by the Steel Founders' Society of America. The group is now pushing intensive collection, segregation, and economical use of scrap.

## Chicago Inspection Offices Opened

Chicago—Three inspection sub-offices were opened by the Chicago Ordnance District last week. Located in Rockford, Ill., Milwaukee and Minneapolis, they will be responsible for the technical and administrative supervision of government inspection of material which was procured under ordnance contracts.

# WYANDOTTE— BEST PREPARED TO HELP YOU SOLVE CONVERSION PROBLEMS

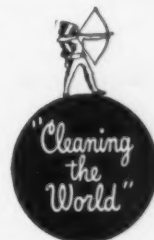
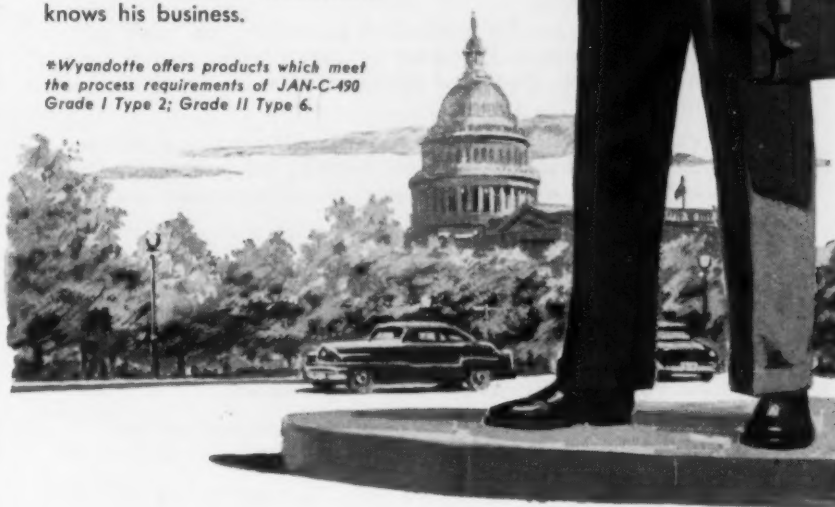
If your defense orders call for a metal cleaning operation, call your Wyandotte Representative. He'll not only bring you the benefit of wide experience gained during World War II, but also improved techniques and new products for normal and unusual metal cleaning operations.

He will go over your contract with you, recommending the products\* and procedures that any metal cleaning operation requires. Whether it's soak, spray, tumble or electroclean, your Wyandotte Representative will always come up with the most efficient and economical method.

He is also your assurance of dependable supplies. Wyandotte is a basic manufacturer of cleaning compounds, and with its nationwide warehousing system can ship your requirements promptly.

Call or write for free technical service. Your Wyandotte Representative knows his business.

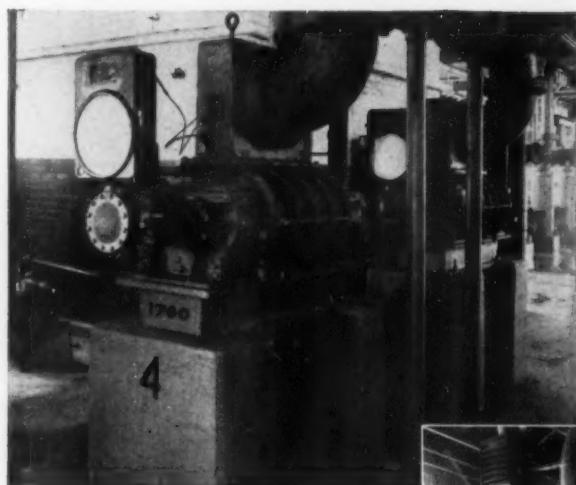
\*Wyandotte offers products which meet the process requirements of JAN-C-490 Grade I Type 2; Grade II Type 6.



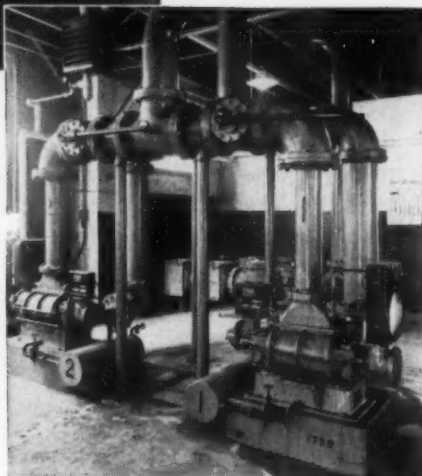
**THE WYANDOTTE LINE**—products for burnishing and burring, vat, electro, steam gun, washing machine and emulsion cleaning, paint stripping, acid pickling, related surface treatments and spray booth compounds. An all-purpose floor absorbent: Zorball. In fact, specialized products for every cleaning need.

**WYANDOTTE CHEMICALS CORPORATION**  
WYANDOTTE, MICHIGAN  
Service Representatives in 88 Cities





The four meters illustrated are part of a total installation of nine R-C Meters in a large processing plant. These units measure acetylene gas sold to nearby manufacturers, who also use R-C Meters at the receiving ends. Capacities range from 3,000 cfh to 130,000 cfh.



## YOU CAN ALWAYS **trust** R-C METERS

If you're measuring gas for production processes, you can't take any chances on quantities. If you are buying or selling it, you need cash register accuracy. You want equal precision for departmental cost accounting.

The permanent accuracy of R-C Positive Displacement Meters has long been proved for all these purposes by manufacturers and utilities which buy, sell and use gas. Four important reasons account for this unvarying reliability:

1. Accuracy is not affected by variations in specific gravity, rate of flow, pulsation, moisture, impurities or uncontrollable factors.
2. Accuracy is not subject to adjustment of meter or recorder by operators or other persons.
3. Accuracy is not affected by reasonable overloads.
4. Accuracy is permanent because measuring chambers are surrounded by precision-machined, cast-iron surfaces.

The 31 standard sizes of R-C Meters give capacities from 4,000 cfh to 1,000,000 cfh. They are extremely compact, permitting installation in cramped spaces. Indicating and recording instruments are available for all types. For whatever purposes you measure gas, you can permanently depend on R-C Meters. Ask for Bulletin 40-B-14 or write us your specific problem.

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## • News of Industry •

### Bureau of Mines Men Discuss Minnesota Manganese, Drill Cores

Hibbing, Minn.—The mineral-rich Cuyuna Range of Minnesota contains about 500 million tons of low grade iron material from which 10 to 25 million tons of metallic manganese can be recovered, said Walter E. Lewis, chief of the Bureau of Mines Minerals Survey Branch for Region V at Minneapolis.

He spoke at mining and drilling symposiums held here under the sponsorship of the University of Minnesota's Center for Continuation Study, cooperating with the Eighth District Society, Minnesota Assn. of Professional Engineers. The average manganese content of the ore ranged from 2 to 10 pct, Mr. Lewis said.

A. B. Needham, chief of the Bureau of Mines, Region V, reviewed drilling on a Minnesota iron sulfide deposit near the Cuyuna Range and discussed the sulfur shortage. In another talk, he disclosed that over 71,800 boxes of drill cores totaling almost one million ft can eventually be stored in the new Federal Bureau of Mines core library outside of Twin Cities. He discussed the importance of storing drill cores for later study.

### Nominate New ASCE President

New York—Carlton S. Proctor, this city, was nominated for the 1952 presidency of the American Society of Civil Engineers by the ASCE board of direction at its Houston, Tex., meeting. A World War II officer and now engineering consultant, Mr. Proctor has held several posts with ASCE.

### To Operate as Division

Pittsburgh—The newly-acquired Fort Pitt Malleable Iron Co. will operate on or about Apr. 16 as a division of the Steel Trading Corp. The plant is now being rehabilitated for more efficient operation. Edward W. Wright will continue to be in charge of operations and Donald A. Kilpatrick will be assistant general manager.

## Industrial Building Doubles As First Quarter Record Falls

Washington—Paced by a doubling of industrial construction, the nation's building activities reached an all-time peak total of more than \$4.6 billion for the first quarter 1951. It was \$3.9 billion for first quarter 1950.

Plant expansion for defense production continued to rise in March to bring the first quarter total to \$405 million. March residential construction, despite tightened credit curbs, amounted to \$848 million for a quarterly total of \$2.6 billion, about 17 pct more than last year.

The freeze on commercial construction had not yet begun to show up in March, the quarter's total rising above \$600 million for stores, garages, and similar types of building, an increase of about 45 pct from first quarter 1950.

Military and naval construction, a small percentage of the whole, rose about 16 pct to \$90 million for the quarter. Highway construction expenditure continues to increase, the quarterly total amounting to \$285 million.

## Aircraft Magnesium Deliveries

Washington—The Secretary of Defense is now permitted by NPA to reschedule deliveries of magnesium for military aircraft production.

Magnesium products covered by the action includes bar, sheet, strip, tubing, extrusions, forgings and castings. This additional authority permits shifting of delivery schedules to meet the more urgent requirements as they occur.

## Spanish Steel Men to Meet

Madrid—The Institute of Iron and Steel of Spain will hold its second general assembly here from Nov. 4 through 10. Officials of the organization welcome American visitors and American technical contribution. Further information is available from Agustin Plana, Director of the Instituto del Hierro y del Acero of Spain, Villanueva, 15, Madrid.



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## Versatile Torrington Spring Coiler

In spring coiling, the words "Torrington" and "Versatile" are synonymous! When you desire springs produced to meet exacting requirements, just call the professional springmaker who has a Torrington coiler. He's the man who can fill your needs with accuracy, speed and economy. On special springs, our sales department will gladly assist you in finding a source of supply, or help your springmaker devise just the right tooling to produce it.



MODEL W-11 SPRING COILER

The 14 different Torrington Spring Coilers cover a range of wire diameters from .003" to .750".

### SPECIFICATIONS of the Model W-11 Spring Coiler

Wire diameter range: .015" to .072"  
Wire Length per Spring: 0" to 42"  
(Extra Wire Feed Gears Available)  
Coil Range (O.D.): 3/32" to 1-9/16"  
Production: 23 to 190 springs per minute with variable speed drive.  
Torsion and other attachments are available.

**The TORRINGTON**  
MANUFACTURING COMPANY  
TORRINGTON, CONNECTICUT



# Round and Rectangular

## HEVI DUTY Pot Furnaces

for  
✓ LEAD  
✓ SALT  
and  
✓ BABBITT



### Designed for

- MELTING
- HEAT TREATING  
SMALL PARTS
- EXPERIMENTAL  
WORK, ETC.

Pot Temperatures to 1450° F.  
Chamber Temperatures to 1650° F. Maximum

These Hevi Duty Pot Furnaces are used for the immersion method of heat treating small parts, drills, and taps, and for melting and maintaining of babbitts, lead, and solder at proper working temperature.

If your requirements call for any of these operations, you will find, as others have, that a Hevi Duty Pot Furnace is the solution to your problem.

Write For Bulletin HD-546 and HD-635

### HEVI DUTY ELECTRIC COMPANY

HEAT TREATING FURNACES **HEVI-DUTY** ELECTRIC EXCLUSIVELY  
DRY TYPE TRANSFORMERS — CONSTANT CURRENT REGULATORS  
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### • News of Industry •

#### Indiana Harbor Sets Records

Chicago—Inland Steel's Indiana Harbor Works set 56 production and operating records in March, biggest month in the mill's 50-year history. Ingot production reached 336,811 tons, the third new high mark in 10 months.

Shipments of finished steel, including 55,000 tons of conversion products rolled from customers' semi-finished steel, totaled 325,450 tons. Peak wartime shipments were 252,210 tons in March 1945.

#### Ore Boats Wait for Ice Reports

Cleveland—Advance elements of the Great Lakes iron ore fleet were poised at the Soo waiting word on ice conditions before proceeding into Lake Superior. The U. S. Coast Guard cutter *Mackinaw* was tied up at Duluth Monday, first ship through from the Lower Lakes this season.

Strong winds had built up a barrier of slush ice 2-miles wide blocking off Two Harbors, Duluth, Superior and Ashland Harbors to ore carriers, according to Capt. Dwight W. Dexter, skipper of the *Mackinaw*.

Opening of Lake Superior will be delayed for several days, but shippers hope to load an estimated 2 million tons of iron ore in April. Last week 72,000 tons was loaded. Last April, 348,000 tons were loaded, starting on Apr. 19. First cargo of iron ore from Escanaba was scheduled to arrive here Apr. 11.

#### Mothball Ships to Haul Ore

Washington—Conversion of three cargo ships into ore vessels is scheduled to add 43,500 tons of shipping capacity to the Great Lakes ore-carrying fleet.

The Defense Transport Administration has approved a \$4,944,973 RFC loan to the Nicholson Universal Steamship Co., of Detroit, for conversion of the three C-4 cargo ships into ore vessels.

Now in the Atlantic "mothball fleet," the three ships will be converted at Sparrows Point.

# STEEL CONSTRUCTION NEWS

Fabricated steel awards this week included the following:

- 1100 Tons, Morrisville, Pa., industrial building for General Refractories Corp., to American Bridge Co., Pittsburgh.
- 800 Tons, Denver, Colo. Rocky Mt. Arsenal to Des Moines Steel Co.
- 420 Tons, Cook County, Ill. Bridge section 42 F-9 Bethlehem Steel Co., low bidder.
- 325 Tons, St. Clair County, Ill. Bridge section 146 F Illinois Steel Bridge Co., low bidder.
- 300 Tons, Jasper County, Iowa Bridge project FN-64 to Des Moines Steel Company.
- 300 Tons, Chicago, Exide Battery Co. Bldg. to A. C. Wood Co.
- 240 Tons, Waukesha County, Wis. Bridge project F06-(26) 25 to American Bridge Co.
- 200 Tons, Crystal Lake, Ill. Bldg. for Harnischfeger Corp., to Wandnagel & Co.
- 180 Tons, Maywood, Ill. County Bridge sect. 062-3434.3 MFT.
- 145 Tons, Mitchell County, Iowa Bridge project to Pittsburgh, Des Moines Steel Co.
- 181 Tons, Bibb County, Alabama, highway bridge, Alabama Highway Department to Virginia Bridge Company, Birmingham.

Fabricated steel inquires this week included the following:

- 4250 Tons, Amesbury and Newburyport Mass, superstructure over Merrimack River, continuous multi span steel truss bridge. Charles A. Fritz, Beverly, district engineer. Completion date Nov. 19, 1952.
- 400 Tons, Philadelphia, laundry building at Philadelphia State Hospital. Bids due Apr. 18.

Reinforcing bar awards this week included the following:

- 2000 Tons, Newark, Del., Chrysler Corp. manufacturing plant, H. K. Ferguson Co., Detroit, general contractors, to Bethlehem Steel Co., Bethlehem.
- 2000 Tons, Dayton, Ohio, Waterworks to Bethlehem Steel Co.
- 500 Tons, Iron Mt., Mich. Wisconsin-Michigan Power Co., to Cook and Brown.
- 450 Tons, Philadelphia, public school at 29th St. and Berks Ave., McCloskey & Co., same city, general contractors, to Bethlehem Steel Co., Bethlehem.
- 230 Tons, Dayton, Ohio, Aero Products Div. of GMC to U. S. Steel Supply Co.
- 215 Tons, Madison, Wisc., Univ. of Wisc., to U. S. Steel Supply Co.
- 200 Tons, Toledo, Ohio, St. Charles Hospital 59 Hausman.
- 200 Tons, Ankeny, Iowa, Carney School, to Lacleve.

Reinforcing bar inquiries this week included the following:

- 20,000 Tons, Morrisville Pa., Fairless Works.
- 1900 Tons, Dubuque, Iowa, storm relief sewer section D.
- 600 Tons, Chicago, Ill., Billings Hospital addition.
- 600 Tons, Chicago, Ill., University of Chicago.
- 525 Tons, Chicago, Ill., Town House.
- 360 Tons, Amesbury and Newburyport, Mass., superstructure of bridge over Merrimack River. Completion date Nov. 19, 1952.
- 360 Tons, Madison, Wisc., Univ. of Wisc., State Library of Hygiene.
- 340 Tons, Excelsior, Minn., Minnetonka High School.
- 320 Tons, Fergus Falls, Minn., Orewall Dam.
- 310 Tons, Chicago, Ill., sewer contract 1-E.
- 300 Tons, Des Moines, Iowa, Women's Dormitory Building.
- 250 Tons, Amesbury and Newburyport, Mass., substructure of bridge and access roads and rough grade. Completion date May 24, 1952.
- 210 Tons, Milwaukee, Wisc., post office garage.

## Your Arcos Field Engineer Can Help KEEP YOUR PRODUCTION GOING

**Application Chart**  
**ARCOS STAINLESS, LOW HYDROGEN, NON-FERROUS ELECTRODES**

GENERAL TYPE	USUAL WELDING APPLICATIONS	POPULAR NAMES	ARCOS GRADE	CURRENT	ARCOS NO.	COATING		STUB END COLOR
						TYPE	COLOR	
Cavitation Resistance	17/7	F308-15	Chromed 16/7	DC	D-301	Line	Green	Yellow
			Chromed 19/8a	DC	D-307	Line	Green	Black
			Chromed K	DC	A-308	Tan	Green	Black
			Chromed HC	DC	A-309	Line	Green	Black
Types 301, 302, 304, 308	19/9a	F308-15	Chromed 16/7	DC	D-301	Line	Green	Yellow
			Chromed 19/8a	DC	D-307	Line	Green	Black
			Chromed K	DC	A-308	Tan	Green	Black
			Chromed HC	DC	A-309	Line	Green	Black
Type 309, or for joining 18/8 stainless to mild steel.	25/12	F309-16	Chromed 25/12Cb	DC	D-309Cb	Line	Green	Red
			Chromed 25/12Cb	DC	D-310	Line	Green	Red
			Chromed HCN	DC	A-310	Line	Green	Red
			Chromed HCN	DC	D-310Cb	Line	Green	Red
Similar to Type 309 for welds requiring columbium	25/20	E310-15	Chromed 25/20Hb	DC	D-312	Line	Green	Yellow
			Chromed 25/20Hb	DC	D-312	Line	Green	Yellow
			Chromed 29/9	DC	A-316	Line	Green	Yellow
			Chromed KRo	DC	A-316Cb	Line	Green	Yellow
Type 316, or stainless clad, or stainless to mild steel.	25/20Cb	E316-15	Chromed KRo	DC	A-316	Line	Green	Yellow
			Chromed KRo	DC	A-316Cb	Line	Green	Yellow
			Chromed KRo	DC	A-317	Line	Green	Yellow
			Chromed KRo	DC	A-317	Line	Green	Yellow
Similar to Type 316 for welds requiring columbium or columbium	29/9	E316-16	Chromed 18/8Hb	DC	D-320	Line	Green	Yellow
			Chromed 18/8Hb	DC	D-320	Line	Green	Yellow
			Chromed 20/29CuRo	DC	D-322	Line	Green	Yellow
			Chromed W	DC	D-324	Line	Green	Yellow
Similar to Low Alloy Steels	18/12Mo	E317-16	Chromed 18/8Hb	DC	D-320	Line	Green	Yellow
			Chromed 18/8Hb	DC	D-320	Line	Green	Yellow
			Chromed 20/29CuRo	DC	D-322	Line	Green	Yellow
			Chromed W	DC	D-324	Line	Green	Yellow

Your Arcos representative can be more helpful to you now than ever before. He can help you—

- Select electrodes to meet defense specifications
- Often find alternate electrodes for the job
- Locate available electrodes of a different diameter that can do the job
- Advise on welding techniques to step up production

Get in touch with your Arcos representative today. He will do his best to help you keep your production rolling.

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Application Chart.

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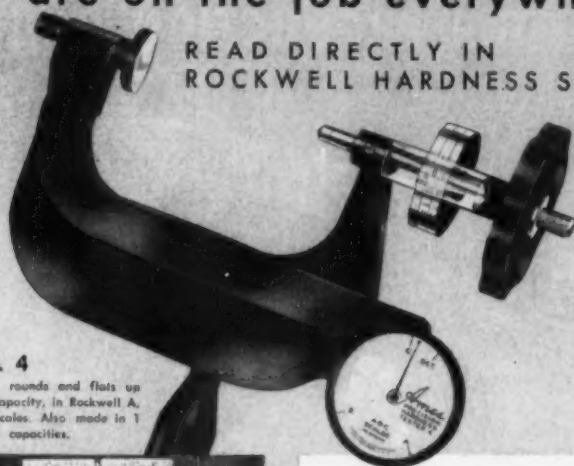
# ARCOS

Specialists in Stainless, Low Hydrogen and Non-Ferrous Electrodes



# Ames HARDNESS TESTERS are on the job everywhere!

READ DIRECTLY IN  
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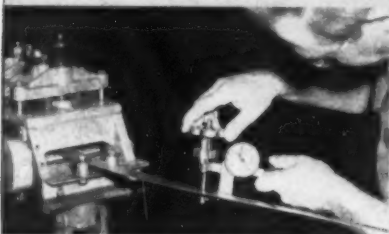


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For testing rounds and flats up to 4 inch capacity, in Rockwell A, B and C scales. Also made in 1 and 2 inch capacities.



Testing hardness of babbitt metal with Model S reading in Rockwell N and T scales.



Testing strip steel before fabricating — an important operation that insures against defective materials.

More than 1500 in use.  
Send for descriptive bulletin.

**AMES PRECISION MACHINE WORKS**  
WALTHAM 54, MASS.

You'll find Ames Portable Hardness Testers being used in warehouses, machine shops, schools, on the production line, and in the field — where accurate, on-the-spot, time-saving hardness tests have to be made. No specimens to be cut off — no waiting for laboratory tests — because Ames Testers are light in weight and are carried to the work.

Ames Hardness Testers are used to determine machinability and workability of rods, strip and sheets before fabricating to prevent undue machine wear or tool breakage resulting from excessive hardness. They also are used on saws, knives, gears and large parts. A practical trouble shooter for any plant. No skill required to get accurate results. Testers come in convenient carrying cases.

## publications

Continued from Page 34

cial cleaning cabinet for smaller parts. *Pangborn Corp.*

For free copy insert No. 9 on postcard, p. 35.

### Spot Your Danger Areas

A convenient new easy-to-read check chart helps guard against the costly invasion of rust. The chart consists of a plant diagram showing all vulnerable spots where rust is most likely to attack, requiring expensive repair or replacement of vital parts or equipment. Included is a survey form to determine the proper No-ox-id to use in each particular case. *Dearborn Chemical Co.*

For free copy insert No. 10 on postcard, p. 35.

### Lift Trucks & Hoists

A comprehensive new 46-p. catalog of materials handling equipment gives a general description and application data on Yale gas and electric fork lift trucks, motorized hand trucks, hand lift trucks, and hand and electric hoists. One section of the booklet describes various attachments available for these industrial trucks that give them added versatility. *Yale & Towne Mfg. Co.*

For free copy insert No. 11 on postcard, p. 35.

### Tubing Technical Data

Technical data valuable to engineers associated with the design, fabrication and application of stainless tubing is offered in a new 4-p. bulletin. The folder contains condensed data on analyses, oxidation resistance, thermal treatment and mechanical, electrical and physical properties on 10 of the most popular B & W austenitic and ferritic stainless tubing steels. *Babcock & Wilcox Tube Co.*

For free copy insert No. 12 on postcard, p. 35.

### New Conveyor Chain

A new type of conveyor chain, known as Rex Flex Top, is described in a 4-p. bulletin. The new chain is of the flat-top type, but its construction is such that it can flex in two planes, horizontal and vertical, and can curve around sharp corners with ease. The folder lists specifications, and tells how this

## Is Your Plant "Well Informed"?

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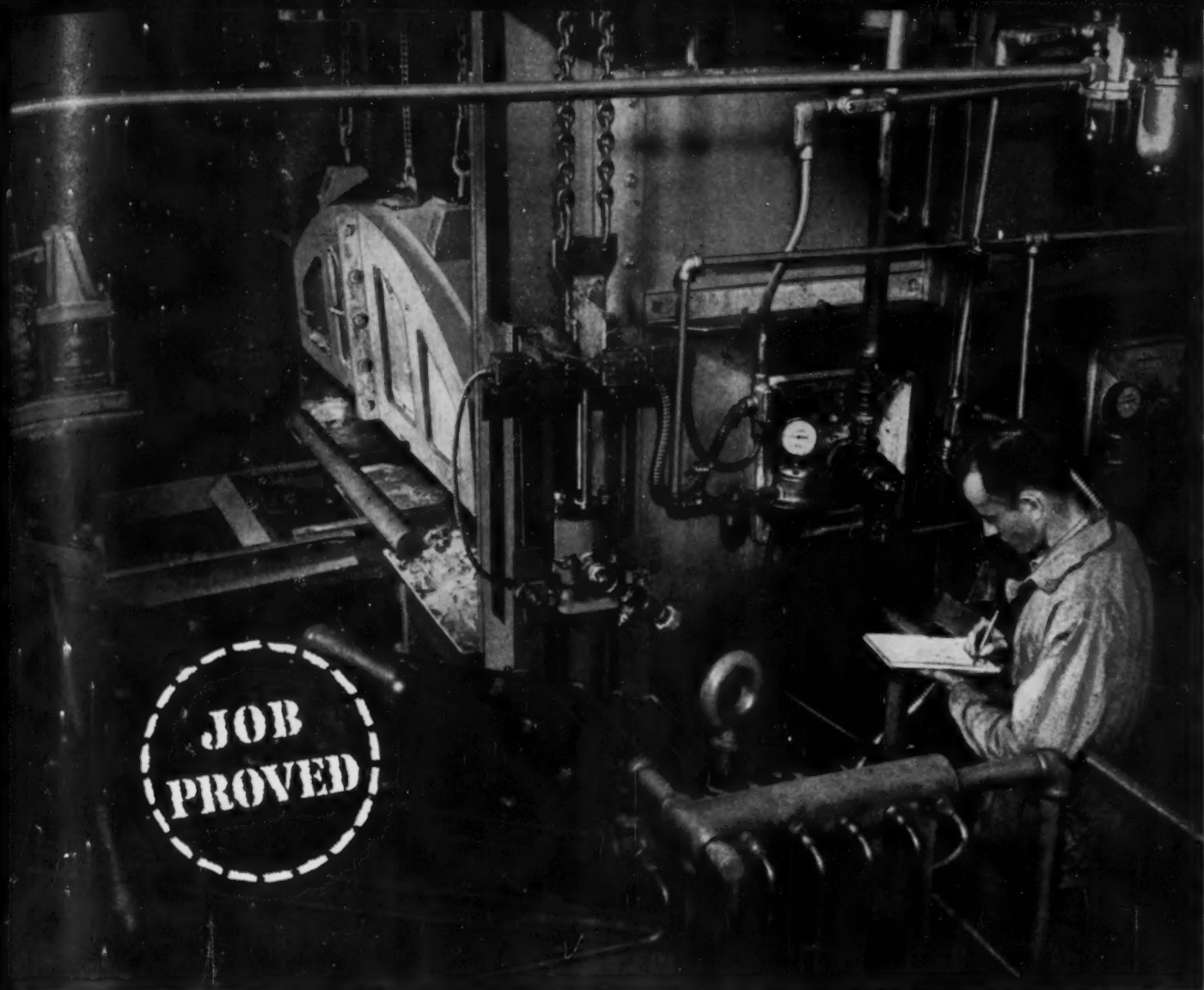
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**THE IRON AGE**

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**JOB  
PROVED**

## HYDRAULIC SYSTEM KEPT LIKE NEW

### Sunvis 916 Effects Substantial Savings; Strainers and Lines Kept Sludge-Free

A copper tubing manufacturer uses an oven with hydraulically operated doors to heat billets to approximately 1550F. The ambient temperatures around the hydraulic mechanism are abnormally high, putting the hydraulic fluid to a severe test of stability. Failure of the system would halt the piercing operation and result in costly delays throughout the plant.

Since the oven was first put in

operation, three years ago, the hydraulic fluid has been Sunvis 916. The original charge has never been changed and is still in excellent condition, though the system is tight and requires only a minimum of make-up. Oil lines and strainers are completely free of sludge. Seals and packings are sound. Operations are never interrupted for oil changes or parts maintenance. The company expects to retain the orig-

inal charge of Sunvis 916 in service indefinitely, effecting large savings in both oil and maintenance costs.

Sunvis 916 is a solvent-refined oil of the highest quality. It is fortified to resist the oxidation and sludging so detrimental to the efficient operation of hydraulic systems. Sunvis 900 Oils are *good for the life of your machines*. For your copy of the illustrated booklet "Sunvis 900 Oils" write Department IA-4.

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when dependable service and  
good workmanship are important



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## publications

*Continued*

chain eliminates transferring containers from one conveyer to another. *Chain Belt Co.*

For free copy insert No. 13 on postcard, p. 25.

### Alloy Conservation

Although primarily stressing the conservation of hard-to-get alloys used in sheet metal components of aircraft power plants, a new booklet offers some vivid comparisons of how as much as 30 pct vital alloys may be saved in other industries, too. It points out how to achieve savings of these metals and better product performance by use of high-temperature alloy metals in the Cladmetal form. *American Cladmetals Co.*

For free copy insert No. 14 on postcard, p. 25.

### Nails, Rivets, Screws

A description of cold heading and the advantages it offers is presented in a new 36-p. catalog showing a large variety of Hassall special nails, screws and rivets, in a number of different metals. The booklet tells how these various products are made, plated and packaged. Threaded blanks for use in metals and plastics, made to special order, are also covered. *John Hassall, Inc.*

For free copy insert No. 15 on postcard, p. 25.

### Electric Hoists

A new 6-p. catalog describing heavy duty electric cable hoists shows various types of suspensions and a large cutaway view of the Bob-Cat hoist. It gives detailed specifications on 1 to 5-ton models and lists lifting capacities, heights, lifting speeds, weights, over-all dimensions and other data. *Ohio Hoist & Mfg. Co.*

For free copy insert No. 16 on postcard, p. 25.

### Industrial Hardware

A new, revised and enlarged 44-p. data book combines engineering information with an extensive catalog of a complete line of wire rope and chain fittings. In addition to presenting working characteristics of each product to remove guesswork in selecting the proper fitting, tables and charts make it a handy reference. *Thomas Laughlin Co.*

For free copy insert No. 17 on postcard, p. 25.

*Resume your Reading on Page 35*



**"YOU BUY 1 BOX . . . OR 10,000 BOXES . . .  
AT THE SAME LOW FLAT PRICE PER BRUSH!"**

## **BECAUSE WE'VE STANDARDIZED NATIONAL TRADE-MARK CARBON BRUSHES**

**FOR STEEL MILL EQUIPMENT!**

**YOU PAY** the same low, flat price regardless of how many brushes you buy, providing you buy one box or multiple thereof. You get fast delivery because these brushes are kept in stock in large supply. You get better quality because of manufacturing refinements made possible by mass production economies. You get a brand new package — sturdy, attractive, easy to store and handle.

Why is this possible? Because we have **STANDARDIZED "NATIONAL"** brushes for popular motors and generators. We have picked the most versatile, the most widely used, the best brushes in the field. We have made them applicable to an even greater number of jobs — made them better in many ways — and we are now making these brushes in quantity. The list of **STANDARDIZED** steel mill brushes follows:

### **FOR MILL TYPE MOTORS**

NC 20-4800	2 1/4 x 1 1/2 x 5/8 Grade AX-5	—For GE Type "MD"; West. "MC" & "K"
NC 20-5600	2 1/4 x 1 3/4 x 5/8 Grade AX-5	—For GE Type "MD"; West. "MC" & "K"
NC 24-4800	2 1/2 x 1 1/2 x 3/4 Grade AX-5	—For West. Type "MC"
NC 24-5600	2 1/4 x 1 3/4 x 3/4 (%-%)	—"Plytek" Brush Grade AX-5— For GE Type "MD"
NC 24-6400	2 1/2 x 2 x 3/4 Grade 401	—For West. Type "MC" & "K" Also Crocker-Wheeler "EW", "FW" & "SW".

### **FOR GENERAL PURPOSE D. C. MOTORS AND GENERATORS**

NC 12-3202	1 3/4 x 1 x 3/8 Grade 255	—For West. Type "SK"
NC 12-4001	1 3/4 x 1 1/4 x 3/8 Grade 255	—For West. Type "SK"
NC 20-4002	1 3/4 x 1 1/4 x 5/8 Grade 255	—For West. Type "SK"
NC 12-5610	2 1/2 x 1 3/4 x 3/8 Grade SA-35	—For West. Tandem Holders
NC 16-5603	2 1/2 x 1 3/4 x 1/2 Grade SA-35	—For West. Tandem Holders
NC 12-4003	2 x 1 1/4 x 3/8 Grade 255 (15/15 Bevel)	—For GE Type "CD"
NC 16-3205	2 x 1 x 1/2 Grade 255 (15/15 Bevel)	—For GE Type "CD"
NC 12-4802	2 1/4 x 1 1/2 x 3/8 Grade SA-35	—For "Toe-to-Toe" Holders
NC 16-4804	2 1/4 x 1 1/2 x 1/2 Grade SA-35	—For "Toe-to-Toe" Holders

### **FOR ELECTRIC WELDERS**

NC 16-2001	1 1/4 x 5/8 x 1/2 Grade SA-50
NC 16-4801	1 1/2 x 1 1/2 x 1/2 Grade 255
NC 20-4801	1 3/4 x 1 1/2 x .618 Grade 255
NC 20-4802	1 3/4 x 1 1/2 x .618 Grade SA-45

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## BRIGHT FINISHING SYSTEM

# SPARKLES

## LIKE CHROME!

Leading manufacturers approve zinc plate

and **IRIDITE** Bright

to replace conventional chrome plating

If your problem is finding the right finish to replace conventional chrome plating, follow the lead of prominent manufacturers of all types of products . . . switch to zinc plate and Iridite Bright.

Here's what you get when you use this chromate finishing system to replace conventional chrome plating.

### SPARKLING BRIGHT APPEARANCE

The zinc plate and Iridite Bright system resembles chrome so closely that visual inspection can scarcely tell the difference! And, the brilliance lasts.

### BETTER CORROSION PROTECTION

Yes, you actually get better protection with zinc plate and Iridite Bright than with chrome plating . . . up to twice the life under accelerated salt spray conditions! And, by applying a clear baking lacquer over the Iridite coating you can increase the abrasion resistance and lasting qualities of this bright finishing system, at the same time making possible a greater salt spray protection.

### LOWER FINISHING COSTS

One metal, zinc, replaces three so you save material costs and plating time. Iridite Bright goes on in a non-electrolytic chemical dip.

Write or call today for your copy of our new Technical Bulletin describing all phases of this bright finishing system in detail. Tell us your bright finishing requirements. If possible send sample parts for test processing.



Iridite is approved under government specifications

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REPRESENTATIVES IN PRINCIPAL INDUSTRIAL CITIES; West Coast: L. H. BUTCHER COMPANY  
Manufacturers of Iridite Finishes  
for Corrosion Resistance and Paint Systems on Non-Ferrous Metals; ARP Plating Chemicals.

## production ideas

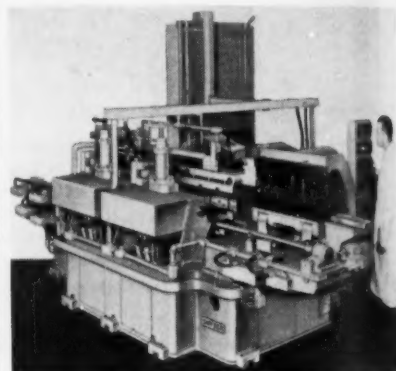
Continued from Page 38

depth of thread on piston and is fixed at 0.004 in. The machine can be set to feed through work and remain in inactive position; feed to adjustable stops and return automatically; or continue in a cycling operation. Boring capacity is  $\frac{5}{8}$  to 6 $\frac{1}{2}$  in. diam. *Hydro-Borer Co.* For more data insert No. 35 on postcard, p. 35.

### Transfer Machine

Special purpose machine drills holes in cast iron cylinder blocks.

The five-station, line transfer machine drills the main bearing cap holes and drills, reams and chamfers the master dowel holes in cast iron, valve-in-head cylinder blocks. Operation is automatic after load-



ing and automatic hydraulic clamping is provided at each station. The operation requires 36 sec, giving a production ratio of 80 pieces per hr at 80 pct efficiency. The machine can be operated by unskilled labor. Tools are high speed steel revolving at 80 sfpm with feed of 0.099 in. for drilling and 55 sfpm with feed of 0.015 in. for reaming. Unit stroke is 14.25 in. Lubrication is automatic through a central system. *Snyder Tool & Engineering Co.*

For more data insert No. 36 on postcard, p. 35.

### Multi-Spindle Drillhead

For machining compressor parts; spindle speeds from 127 to 2000 rpm.

A full ball bearing 34 spindle drillhead with suspended bushing plate and oil circulating pump is used for machining compressor parts. The parts, of pressure molded cast iron, are held in an 8 station rotary indexing table while they are drilled, reamed, countersunk, tre-

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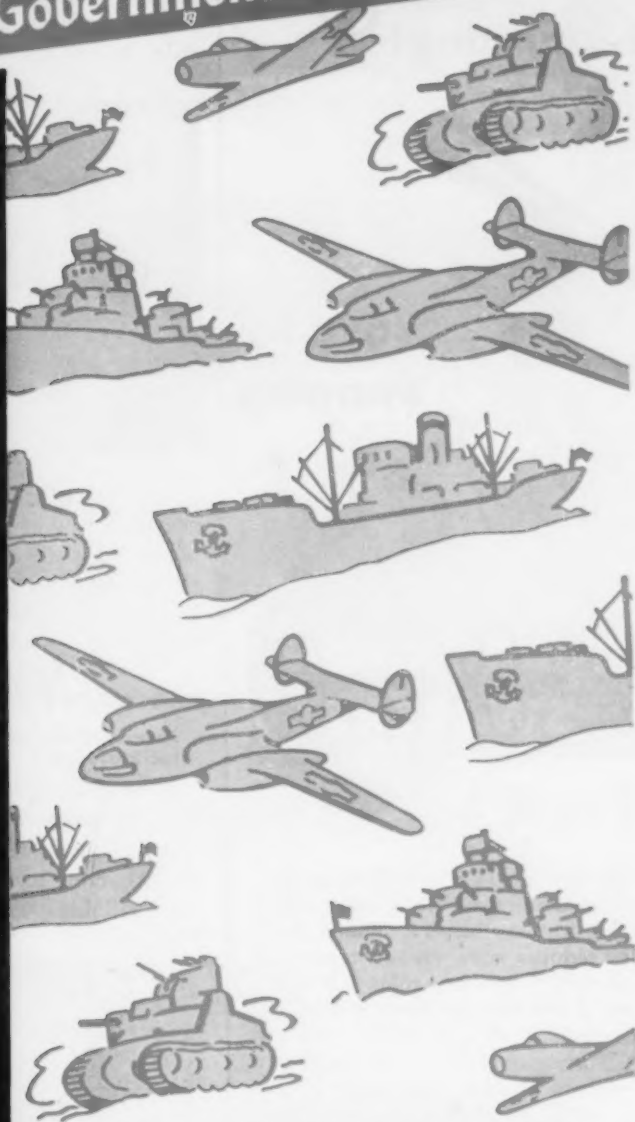
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metal  
by turning!



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Torrington Swagers are built to a mechanical perfection based on our 42 years' swaging experience. Send today for your free copy of the illustrated booklet describing the machine and the method.

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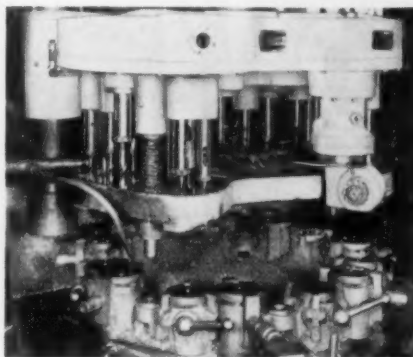
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## production ideas

Continued

paned and milled. The pieces are machined first on one side and then turned and machined on the other side in a two-cycle run. Each



spindle turns at a speed suitable for the operation it performs. A completed part is ejected with every stroke of the drill press spindle. Thriftmaster Products Corp.

For more data insert No. 37 on postcard, p. 35.

## Improved Finishing Barrel

Removable screening drawers facilitate parts-media separation.

A small versatile finishing barrel is equipped with the variable speed drive allowing from 25 to 60 rpm. Twin barrels measure 8x16 in. and are available with or without Neo-



prene lining. All moving parts are enclosed with the safety hood, and the construction is heavy welded steel. Removable screening drawers facilitate separating parts from media, loading and unloading. Model DBO-1 is a complete unit, recommended for the processing of small lots of parts, the processing of close tolerance work, and for research

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INDUSTRIAL  
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SIMONDS is geared to serve you fast on all large and heavy-duty industrial gear requirements. You get personalized attention, with accuracy and quality assured by nearly 60 years of specialized experience. SIMONDS' central location assures prompt delivery on all types and sizes, up to 145" in dia. and including cast or forged steel, gray iron, bronze, Meehanite, rawhide and bakelite. SIMONDS also is stock carrying distributor for Ramsey Silent Chain Drives and Couplings, and industrial V-Belts.

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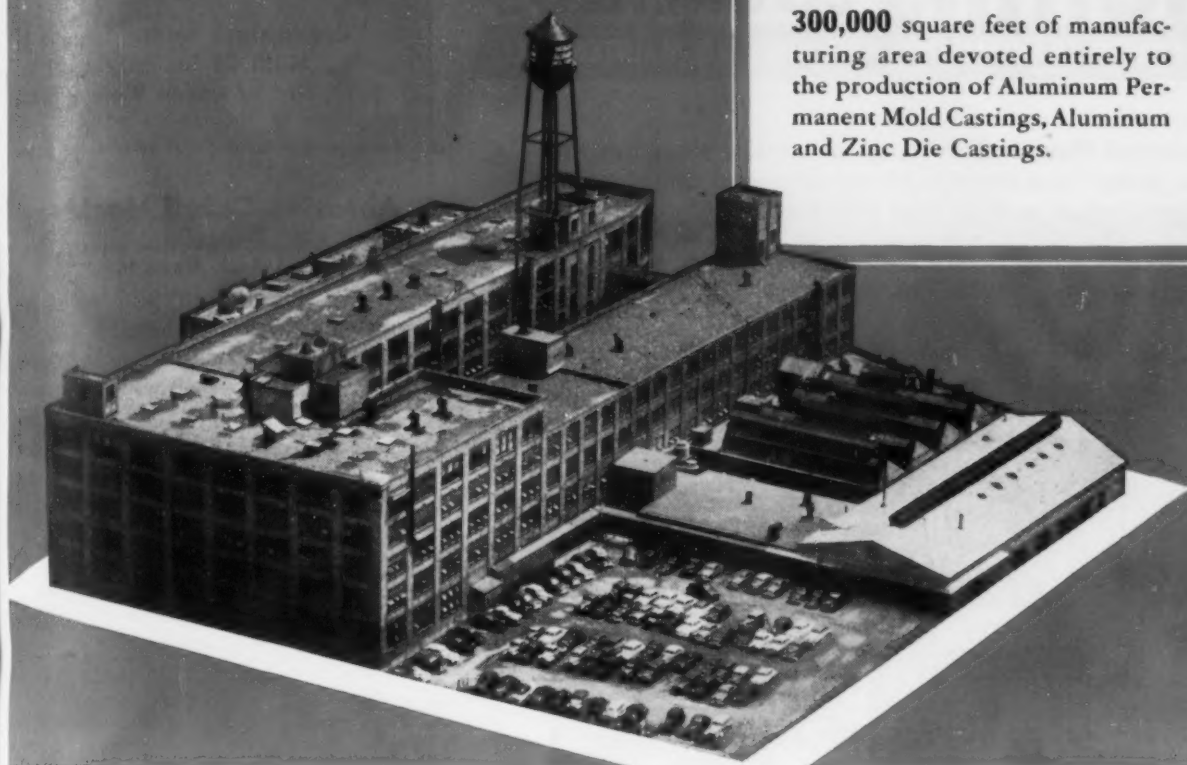
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**300,000** square feet of manufacturing area devoted entirely to the production of Aluminum Permanent Mold Castings, Aluminum and Zinc Die Castings.



## MONARCH IS MOBILIZED To Serve You Now!

Monarch has already been selected for prime and sub-contract defense requirements. We have capacity for additional production of aluminum permanent mold, aluminum and zinc die castings, plus facilities for complete assembly work regardless of casting requirements.

Monarch-Men work at every useful level in industry. They are in an excellent position to

help you solve your own casting and related production problems.

Monarch, under one management for 37 years, has demonstrated the engineering, technical and production capabilities to meet any specific emergency.

Monarch welcomes the opportunity to work with you today in giving the widest possible casting or assembly services, utilizing the full scope of Monarch's unique facilities.

**WRITE TODAY** for your copy of our new "FACT-FILE" folder which illustrates and describes Monarch's outstanding facilities. You'll want it for your castings source file.



**MONARCH ALUMINUM MFG. COMPANY** • Detroit Avenue at W. 93rd Street • Cleveland 2, Ohio

April 12, 1951

141

# THOMAS *Flexible* ALL METAL COUPLINGS

FOR POWER TRANSMISSION • REQUIRE NO MAINTENANCE

Patented Flexible Disc Rings of special steel transmit the power and provide for parallel and angular misalignment as well as free end float.

Thomas Couplings have a wide range of speeds, horsepower and shaft sizes:  $\frac{1}{2}$  to 40,000 HP — 1 to 30,000 RPM.

*Specialists on Couplings for more than 30 years*



PATENTED FLEXIBLE DISC RINGS

**BACKLASH  
FRICTION  
WEAR and  
CROSS-PULL**  
are eliminated  
LUBRICATION IS  
NOT REQUIRED!

THE THOMAS PRINCIPLE GUARANTEES  
PERFECT BALANCE UNDER ALL  
CONDITIONS OF MISALIGNMENT.

• • •

NO MAINTENANCE PROBLEMS.

• • •

ALL PARTS ARE  
SOLIDLY BOLTED TOGETHER.



Write for the latest reprint of our Engineering Catalog.

**THOMAS FLEXIBLE COUPLING CO.**  
WARREN, PENNSYLVANIA

## *production ideas*

*Continued*

and development work. Length is 36 in., width 36 in., height 50 in. *Almco, Div. of Queen Stove Works, Inc.*

For more data insert No. 38 on postcard, p. 35.

## **Abrasive Cutoff Machine**

**Cuts ferrous, nonferrous metals  
at rate of 4 sec per sq in.**

Engineered with positive drive without the use of belts, a  $3\frac{1}{2}$  hp geared-in-head motor on the Model M-14 cutoff machine delivers maximum constant power, thereby increasing cutting speed, affording greatest efficiency, and insuring



longer wheel life. Designed for ease of operation, flexibility and safety, the M-14 swivels up to  $45^\circ$  in either direction, and requires a minimum bench space of 34x32 in. Capacity is  $1\frac{1}{2}$  in. solids,  $2\frac{1}{2}$  in. pipe and structurals, and miscellaneous cutting of 2-in. solids. A semi-high speed saw blade is recommended for cutting nonferrous solids to 1 in. and light wall tubing, structurals, and extrusions up to  $2\frac{1}{2}$  in. *Stone Machinery Co., Inc.*

For more data insert No. 39 on postcard, p. 35.

## **High Speed Millers**

**Reversible motor serves as milling  
head and provides three speeds.**

New, universal, high-speed, vertical milling machines, made by Bohner & Koehle in the U. S. zone of Germany, are available for pattern making and metal working in general. Model SF1 has manual control work table movement and adjustment of the power bracket; model B3 SF1 is equipped with in-

*The right spot*



*for a* **PAYLOADER**

What is the right spot for a PAYLOADER? It's any place inside your buildings or in the yard where bulk materials are being handled by laborious or other obsolete methods. Thousands of these special tractor-shovels are in "right spots" today cutting costs, solving manpower shortages and increasing output.

PAYLOADERS are able to pay for themselves in a few months because they are designed for the specific job of handling bulk materials of all kinds — loading, unloading, scooping, lifting, carrying, dumping and spreading. Outstanding reasons for the performance and acceptance of PAYLOADERS include: short, compact, space-saving design; multiple reverse speeds; large pneumatic tires that permit operation indoors and outdoors . . . on paved or unpaved areas; simple, easy operation; complete hydraulic bucket control.

The 12 cu. ft. model HA shown is an outstanding box car unloader. It is the smallest of six PAYLOADER sizes which range up to 1½ cu. yd. bucket capacity. Every PAYLOADER is backed by 30 years of manufacturing experience and by a world-wide Distributor service organization. The Frank G. Hough Co., 733 Sunnyside Avenue, Libertyville, Illinois.

*Write for* literature on PAYLOADERS and the name of your Hough Distributor. He'll be glad to help you find the "right spot" for the right size of PAYLOADER in your operations. No obligation.



- Unload box cars.
- Carry sand, coke, scrap limestone, etc., to storage.
- Transport and distribute sand to molding stations.
- Remove used sand from floors.
- Windrow sand for the cutter.
- Charge mullers, tumbling barrels.
- Feed conveyors, elevators, hoppers, mixers.
- Clean up gangways, aisles and other areas.
- Handle scrap, small castings, slag.
- Lift-haul-push-pull.

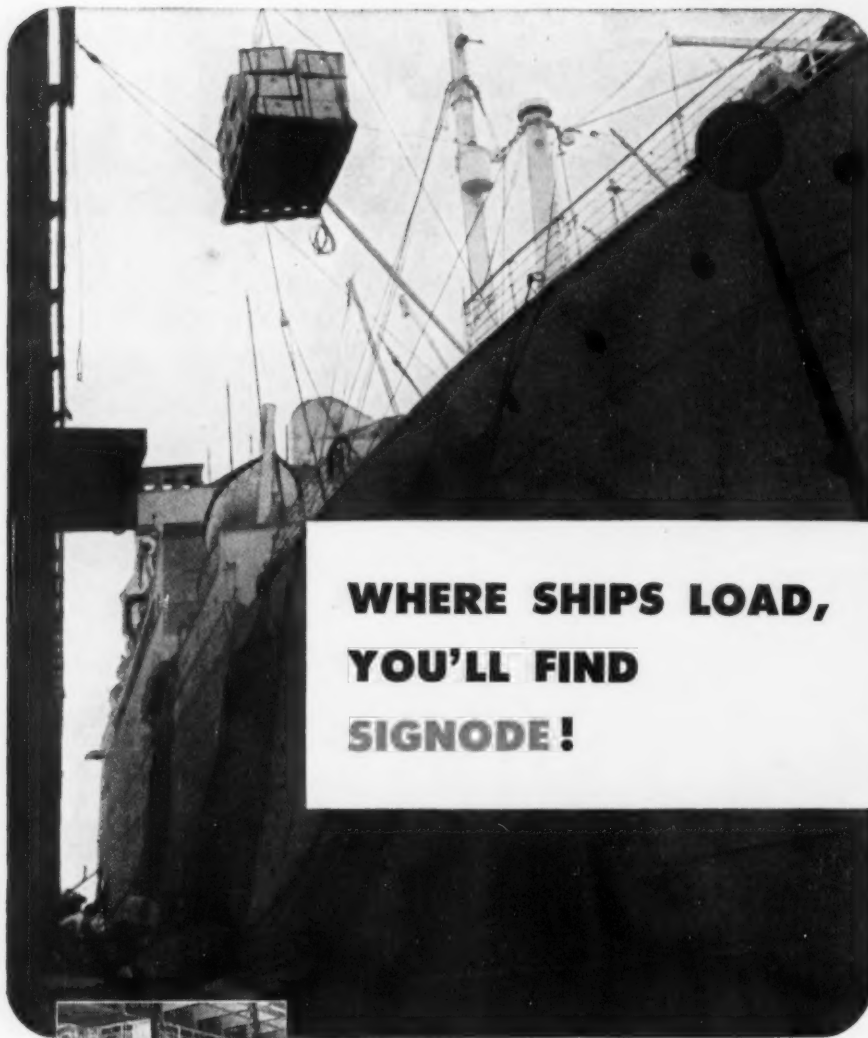


**PAYLOADER®**

THE FRANK G. HOUGH CO. • Since 1920







**WHERE SHIPS LOAD,  
YOU'LL FIND  
SIGNODE!**



You have to be right the first time when you secure cargo for sea. Nobody wants to try taming a heaving hold in a storm, or to tighten lashings with decks awash. Nobody wants cargoes to be damaged or lost at sea. That's why more and more ship operators are using Signode *research-tested methods* of cargo lashing with steel strapping.

**Research is the heart of Signode!** The numerous tests made in Signode's laboratory and on its outdoor railroad test track are equaled only by on-the-job studies conducted by its staff of trained, experienced steel strapping specialists. Many of the most widely used methods of package protection, car bracing and cargo lashing were developed and perfected by these men.

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#### **SIGNODE STEEL STRAPPING COMPANY**

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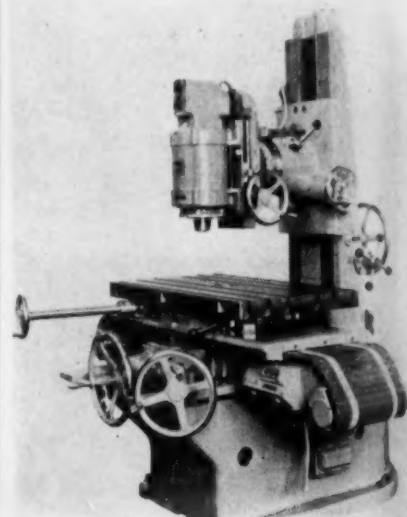
*this seal  
means security in shipping*

Offices coast to coast. In Canada: Canadian Steel Strapping Co., Ltd.  
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## *production ideas*

*Continued*

initely variable automatic feed. A rotary work table for circular milling is available. All controls are conveniently placed. This machine may also be used for polishing and grinding, wood milling by means



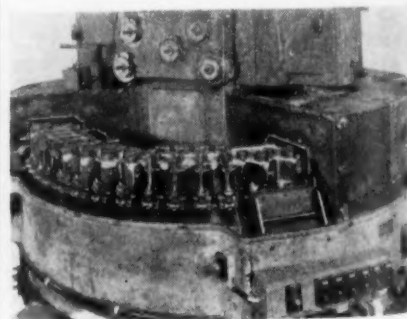
of rotary chain cutter, and planing large surfaces with single-lipped cutting tools. Recesses, grooves, dovetails and all practical contours reportedly can be produced on this machine. *Kurt Orban Co., Inc.*

For more data insert No. 40 on postcard, p. 35.

### **Rotary Surface Grinder**

**For finishing side of connecting rods and connecting rod caps.**

A five head rotary automatic surface grinder has been completed for finishing the sides of connecting rods and connecting rod caps. Workpieces are held in automatic



clamping fixtures. One revolution of the table under the grinding heads finishes one side. Each of the two parts are then turned over into next fixture stations for grinding the other side. Automatic sizers

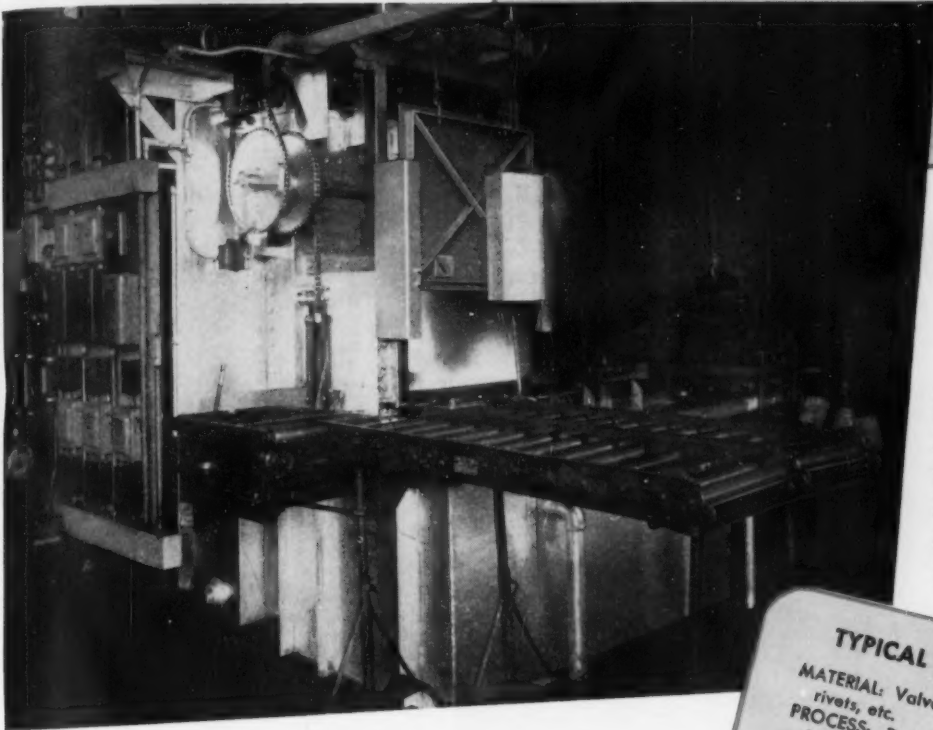


THOUSANDS OF MISCELLANEOUS PARTS

# \* DRY CYANIDED

IN THIS 'Surface' BATCH-TYPE  
HIGH-PRODUCTION FURNACE

\*'Surface' RX Gas Atmos-  
phere enriched with  
natural and ammonia gas.



This 'Surface' Batch-Type, High  
Production Furnace features  
Radiant Tube Heating, built-in  
atmosphere generator (optional),  
Loading and Unloading mecha-  
nism, integrally built tank equip-  
ped with lowerator mechanism for  
liquid quenching. Occupies only  
144 square feet of floor space.

## TYPICAL PERFORMANCE DATA:

MATERIAL: Valve lifters; pinion gears; stampings;  
rivets, etc.  
PROCESS: Dry Cyaniding, Case depth 0.002"  
to 0.020"  
HARDNESS: File hard.  
CYCLE: Loaded trays moved into vestibule. Trays  
move readily in and out of furnace on roller  
hearth. Lowerator mechanism provides convenient  
oil quenching from atmosphere-purged vestibule.  
TOTAL TIME: 1 hr. to 2 hrs.—12 min. varying with  
parts and case depth required.  
NET LOADS: Up to 800 lbs. for these parts.



WRITE FOR BULLETIN SC-145  
"Dry Gas Cyaniding in 'Surface' Con-  
tinuous and Batch-Type Furnaces"  
No obligation

## 24-HOUR PER DAY OPERATION ESTABLISHES RECORD PRODUCTION FOR INDUSTRIAL HEAT TREATING COMPANY, TOLEDO, OHIO

In a commercial heat treating shop the furnace equipment must  
be flexible to meet the varied demands of batch heat treatment  
and provide mass production economy. This 'Surface' Batch-  
Type High Production Furnace installation meets all these re-  
quirements for Dry (Gas) Cyaniding, Gas Carburizing, Carbon  
Restoration (Skin Recovery), Homogeneous Carburization, Clean  
Hardening and for General Heat Treating.

This 'Surface' furnace requires a minimum investment for  
each pound of capacity. Light case dry (gas) cyaniding can be  
done for less than one-half cent per pound of work, exclusive  
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possibilities for your plant—too!

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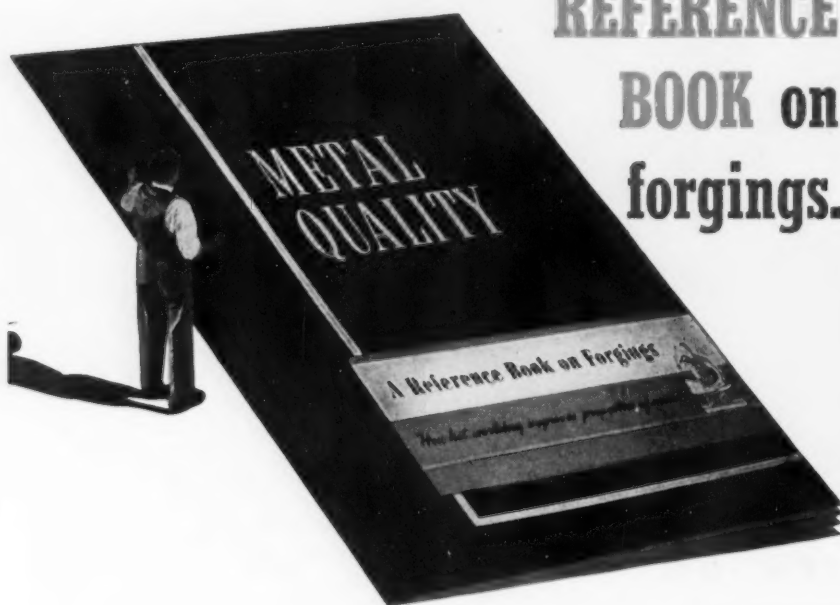
# 'Surface'

## INDUSTRIAL FURNACES

FOR: Gas Carburizing and Carbon Restoration (Skin Recovery), Homogeneous Carburization, Clean and Bright Atmosphere Hardening, Bright Gas-Normalizing and Annealing, Dry (Gas) Cyaniding, Bright Super-Fast Gas Quenching, Atmosphere Malleableizing and Atmosphere Forging. Gas Atmosphere Generators.

What *Forgings* have that offer so many more economic, engineering and production advantages than can be obtained with any other material, is illustrated and described in this

## REFERENCE BOOK on forgings.



Write for a copy. Then consult a forging engineer about how you can obtain the correct combination of mechanical qualities in forgings for your particular type of equipment.

### DROP FORGING ASSOCIATION

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CLEVELAND 15, OHIO

Please send 60-page booklet entitled "Metal Quality—How Hot Working Improves Properties of Metal", 1949 Edition.

Name.....

Position.....

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## production ideas

*Continued*

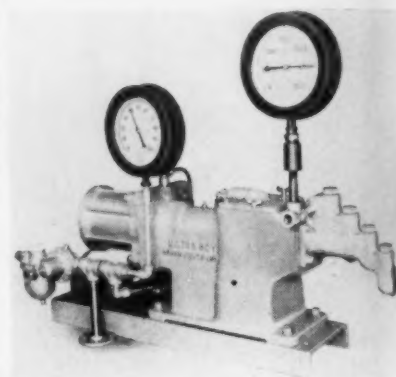
are constantly in operation checking the work and keeping the pieces within the specified tolerances without the operator's attention. *Mattison Machine Works.*

For more data insert No. 41 on postcard, p. 35.

### Pressure Generator

**Has wide range of pressures and capacities for hydrostatic testing.**

The aiROYmetric pressure generator is combined with a group of specially designed simplified controls to develop test pressures up to 25,000 psi, using ordinary plant air supply in the pump cylinder. Each of the pumps develops a discharge pressure ratio range of 6 to 1, permitting single pump use



for applications requiring various test pressures. Capacities range from 4 to 405 gph; pressures from 25 to 25,000 psi. The generator is self-reciprocating, and in operation pumps continuously and automatically at maximum capacity in building up the desired pressure in the system. When a balance is reached between the air pressure and the corresponding hydrostatic test pressure, the pump automatically stops. *Milton Roy Co.*

For more data insert No. 42 on postcard, p. 35.

### Rear Drive Truck Carrier

**For fast hauls of short or long lengths; standard automotive drive.**

A one-ton, flat-bed truck has standard automotive drive with Ross steering assembly and Borg-Warner transmission and clutch. High, second, low and reverse speeds are controlled by one gear shift lever. In steering the front wheels turn as in passenger cars.



Short of Steel?

Short of Pipe?

Short of Dollars?



## DRAVO HEATERS SAVE STEEL, MONEY—FUEL—and MAN HOURS

The steel needed for a heating system can be slashed from 50% to 70% for the representative open-space industrial structure shown below . . . by using the direct-fired warm air heating method with Dravo "Counterflo" Heaters! This conservation of steel, vitally important today, adds another saving to the long list of economies in money, fuel and labor effected by this heating method.

The chart below gives the detailed comparative story. Every system is equivalent in Btu output. Steel requirements for the 13 methods have been carefully and conservatively calculated.

You will see that Dravo Heaters not only take LESS steel in each fuel classification . . . but that the HIGHEST steel requirement in a Dravo installation is *almost 50% less* than the LOWEST steel requirement in any other system!

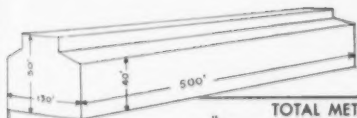
Look at the contrast in *pipe* required! Jobs now held up by slow

pipe deliveries can MOVE . . . if Dravo heaters are used!

Dravo "Counterflo" Heaters can expedite installation jobs for you! And the steel and pipe savings are just two of the many reasons why more and more "Counterflo" Heaters are being used in all types of structures.

### DRAVO HEATERS HAVE EARNED HIGHEST INDUSTRIAL ACCEPTANCE BECAUSE THEY OFFER—

- LOW FIRST COST . . . Users report 50% to 60% savings
- WORKING-ZONE WARMTH . . . Units heat 4,000 to 20,000 sq. ft.
- NO FUEL WORRIES . . . Burn oil or gas . . . readily converted
- AUTOMATICALLY CONTROLLED . . . On-off or modulating controls
- LOW OPERATING COST . . . 80-85% efficiency
- EASY INSTALLATION . . . Fuel, electric and exhaust connections only
- LONG LIFE—LOW MAINTENANCE . . . Stainless Steel combustion chamber
- TESTED—APPROVED . . . AGA and/or UL seal
- AVAILABLE . . . Immediate delivery, no delays



Each heating system compared below was sized to make up a calculated 12,000,000 Btu heat loss in this representative industrial building.

WRITE TODAY FOR BULLETIN KL- 26-2435

COMPONENT	GAS FIRED					OIL FIRED					COAL FIRED		
	DRAVO WARM AIR	HIGH PRESSURE CONVENTIONAL WATER TUBE BOILER	HIGH PRESSURE PACKAGED STEAM GENERATOR	LOW PRESSURE CONVENTIONAL WATER TUBE BOILER	LOW PRESSURE PACKAGED STEAM GENERATOR	DRAVO WARM AIR	HIGH PRESSURE CONVENTIONAL WATER TUBE BOILER	HIGH PRESSURE PACKAGED STEAM GENERATOR	LOW PRESSURE CONVENTIONAL WATER TUBE BOILER	LOW PRESSURE PACKAGED STEAM GENERATOR	DRAVO WARM AIR	HIGH PRESSURE CONVENTIONAL WATER TUBE BOILER	LOW PRESSURE CONVENTIONAL WATER TUBE BOILER
BASIC HEAT GENERATORS	26,400	38,000	62,000	38,000	62,000	26,400	38,000	62,000	38,000	62,000	27,450	38,000	38,000
PIPING—Oil—Steam	9,096	15,490	15,490	35,308	35,308	4,352	15,790	15,790	35,608	35,608		14,990	34,808
TANKS—Oil—Blow-off		3,500	1,500	1,500	1,500	13,000	16,500	14,500	14,500	14,500		3,500	1,500
CONDENSATE													
UNIT HEATERS including Traps & Starters		21,240	21,240	21,240	21,240		21,240	21,240	21,240	21,240		21,240	21,240
STACKS & BREECHING	1,200	4,000	400	4,000	400	1,200	4,000	400	4,000	400	1,200	4,000	4,000
PUMPS—Fuel Oil		1,000	1,000	1,000	1,000	400	1,400	1,000	1,400	1,000		1,000	1,000
Auxiliary Oil—Boiler Feed													
STOKERS & FANS— including Dust Collectors Fuel Oil Preheaters							2,000		2,000		23,850	15,000	15,000
STRUCTURAL STEEL Boiler House Foundation Reinforcing		7,000	2,000	7,000			7,000	2,000	7,000			7,000	7,000
TONS OF STEEL REQUIRED	DRAVO 18	45	52	54	61	DRAVO 23	53	58	62	67	DRAVO 26	52	61

**DRAVO** CORPORATION  
HEATING DEPARTMENT, DRAVO BUILDING, PITTSBURGH 22, PA.

Sales Representatives in Principal Cities



Manufactured and sold in Canada by Marine Industries, Ltd., Sorel, Quebec

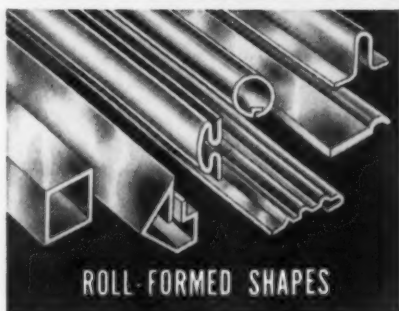
April 12, 1951

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## PROMPT DELIVERY! FOR "D.O." WORK



ALUMINUM  
EXTRUSIONS



ROLL-FORMED SHAPES

Let Werner light metal shapes help you meet "D.O." deadlines.

You can get prompt delivery of "custom" shapes in extruded aluminum, as well as roll-formed aluminum, stainless steel, brass, zinc and copper. Shapes are manufactured to close tolerances, to your exact specifications. Quality is assured by Werner's extensive manufacturing and engineering experience, plus full production facilities, including tool-and-die-making equipment.

For an estimate, send drawing and specifications, plus data on quantity, finish, length, etc. Werner can perform the following secondary operations—bending, drilling, punching, cutting, counter sinking and welding. Finishes—as extruded, polished or anodized.

### R. D. WERNER CO., INC.

295 FIFTH AVE., N. Y. 16, N. Y. • PHONE MU 6-2595

MANUFACTURERS OF ALUMINUM EXTRUSIONS  
AND ROLL-FORMED SHAPES

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 Send to:  
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 FREE bulletins describing manu-  
 facturing facilities and telling when to  
 choose extruded or rolled shapes.  
 \*\*\*\*\*

NAME \_\_\_\_\_

COMPANY \_\_\_\_\_

ADDRESS \_\_\_\_\_

CITY \_\_\_\_\_ ZONE \_\_\_\_\_ STATE \_\_\_\_\_

\*\*\*\*\*



## production ideas

Continued

The driver sits in elevated rear seat facing the load. Narrow aisle use is a feature; turning radius is 8 ft. Designed as a carrier vehicle and towing tractor, the truck has low



20-in. bed, 4 ft wide, 5½ ft long. Speeds are 20 mph, high; 12 mph, second; 6.4 mph low or reverse. Drawbar capacity allows for a pull of 4000 to 6000 lb. Gar-Bro Mfg. Co.

For more data insert No. 43 on postcard, p. 35.

### Remote Control Pullers

Center-hole in ram simplifies jobs by eliminating rigging.

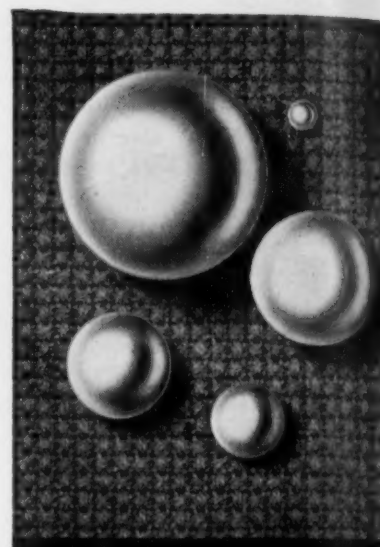
Tubular ram construction in new Simplex Re-Mo-Trol hydraulic rams allows a center pulling screw or rod to be inserted through the center-hole and secured to the object to be pulled. As the ram plunger extends, the rod is drawn through the ram, which supplies its own back-up. Besides pulling axles, shafts,



pins and liners, Re-Mo-Trol units may also be used with pulling brackets and lateral pull rods and for such applications as straightening alignment, spreading chain links and for lifting or lowering machinery. Complete units consist of pumps and rams, with connecting hose. Capacities are from 10 to 100 tons. Templeton, Kenly & Co.

For more data insert No. 44 on postcard, p. 35.  
Resume Your Reading on Page 39

## a metal ball PROBLEM?



Let **STROM**  
Work It Out For You



Whether it is a precision ball bearing or one of the other many ball applications in industry, your problem will not be entirely new. Strom has been in on many ball problems and knows the importance of the right ball for the job.

Strom has been making precision metal balls for over 25 years for all industry and can be a big help to you in selecting the right ball for any of your requirements. In size and spherical accuracy, perfection of surface, uniformity, and dependable physical quality, there's not a better ball made.

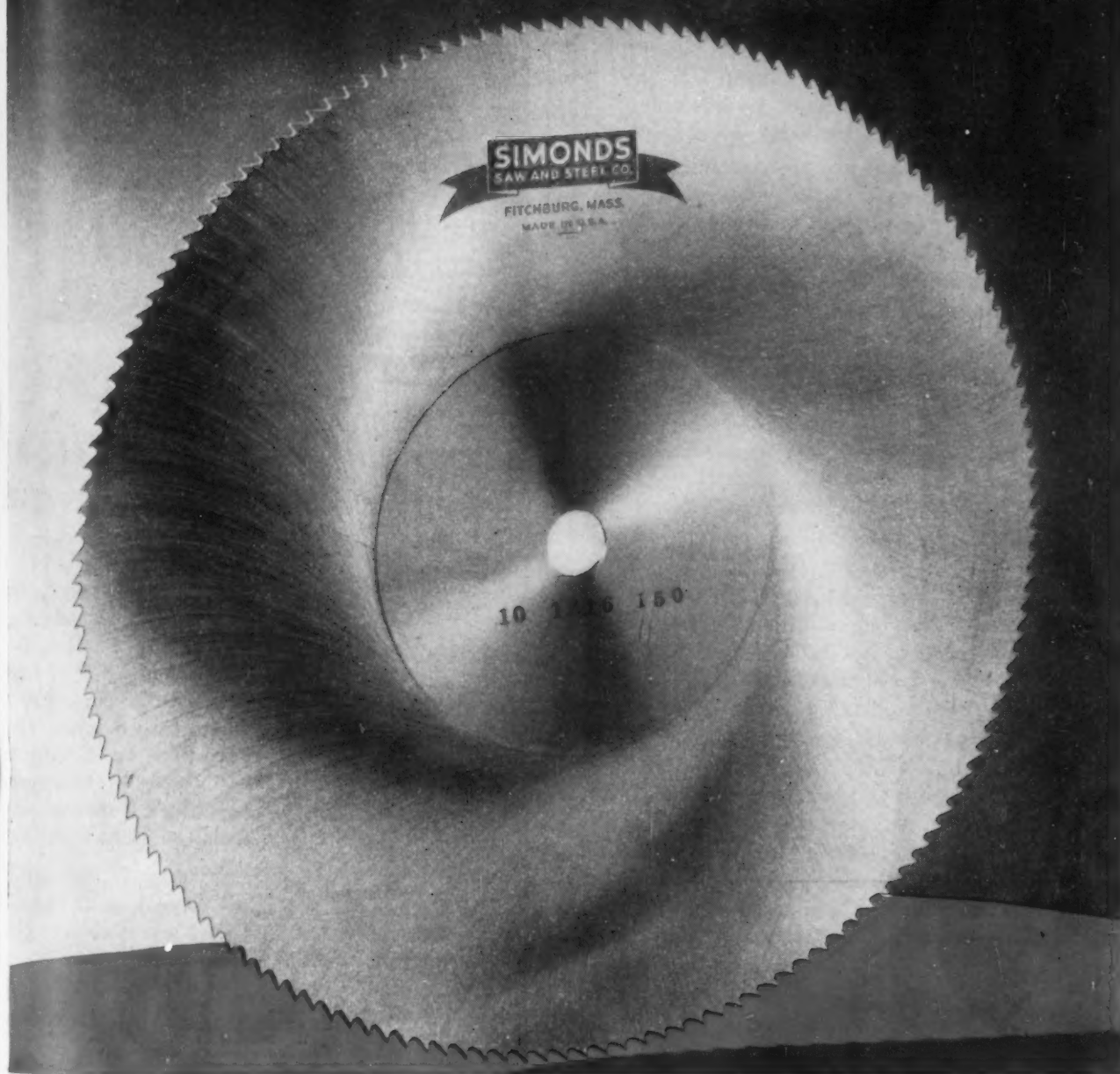
**Strom**  
**STEEL BALL CO.**

1850 So. 54th Ave., Cicero 50, Ill.

Largest Independent and Exclusive  
Metal Ball Manufacturer

# TOPS

for ALL  
NON-FERROUS CUTTING



On all non-ferrous metals, here's the toughest, most "stand-up-and-take-it" saw made... with a proven production record on everything from light-wall sections to solids.

SIMONDS heat-treats these saws for individual applications, according to speed, type of material, and machine. And SIMONDS design assures top cutting efficiency... with correct tooth-shape that eliminates clogging of gullets... with high, smooth finish that resists adherence of chips to plate... and

with proper clearance for freer, cooler, straighter cutting.

Standard sizes are immediately available from stock... so see your Simonds Distributor *today*.



Branch Offices in Boston, Chicago, San Francisco and Portland, Ore. Canadian Factory in Montreal, Que.





## PARTICLE of POWER

A little bolt may have tremendous importance in an industrial process. Its very smallness may be the why of its importance.

The same thing is true about manufacturing in New Jersey. Small industry forms the backbone of the industrial team at the Crossroads of the East. Diversification of industrial production is one of the important keys to industrial progress . . . and small manufacturers are responsible in large part for the wealth of diversified products available in New Jersey.

There are good reasons why small manufacturing plants prefer New Jersey. There's *lots of work to be done . . . and plenty of skilled labor.* It's the *center of industrial research . . . and in the middle of major markets.*

Public Service welcomes so-called "small business." Through industrial representatives, this electric and gas utility gives individual service to all manufacturing plants, helping with problems relating to power, industrial fuel and lighting.

The Industrial Representatives of Public Service can help find available space which you can lease, buildings which you can buy, or industrial sites. They can guide you in securing information on markets, labor supply, taxes, transportation, and other factual data in your location problem.

FOR YOU . . .



Send for your copy of the digested brochure, "The Crossroads of the East". Write Box D, 70 Park Place, Newark, N. J.

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CROSSROADS OF THE EAST  
PUBLIC SERVICE  
ELECTRIC AND GAS COMPANY

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COLD ROLLED STRIP STEEL  
by GRIFFIN**

For the last half century, Griffin cold rolled strip steel has been used profitably by hundreds of manufacturers. They have found that they can rely on Griffin to fill their specifications to gauge, temper, size, finish, length, and edges.

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**GRIFFIN**  
*Manufacturing Company*  
ERIE, PENNSYLVANIA

# IRON AGE *markets and prices*

*market  
briefs  
and  
bulletins*

**denial**—H. M. Wilson of Shenango Furnace Co. denies the company is planning to build a merchant blast furnace at Fairport Harbor, near Painesville, Ohio. "Absolutely nothing to it," says Mr. Wilson. Reports that the company was considering construction of a furnace have been going the rounds for some months. Mr. Wilson previously had classified such reports as premature, and later said the company considered the proposition economically unfeasible.

**vanishing act**—Conversion steel is drying up fast and won't be available in the third quarter to permit buying at an 80 pct rate, big converters report. One big reason is that government directives calling for ingots and semi-finished steel are cutting a wide swath into the source of conversion material. Also, the Canadian government has interceded to keep Canadian semifinished steel at home.

**cutting tools, abrasives**—While most cutting tools, abrasives and grinding wheels are still available from stock, delivery time is beginning to lengthen on some items. Delivery of 90 to 95 days is already quoted on some special carbide tools. Manufacturers of cutting tools and abrasive products are working round the clock 7 days a week to meet the avalanche of orders they expect to hit in about 6 months.

**Teflon allocated**—Teflon, a high impact plastic used for industrial gaskets and other purposes, has been placed under complete allocation as of May 1. None will be allocated for other than defense or supporting programs and both suppliers and consumers must have NPA approval.

**switch to basic** — Hanna Furnace Co. will soon switch their silvery iron furnace at Buffalo over to basic in order to stock up a bit before relining it and one of the other furnaces there. Switch will enable the furnace to produce a bit longer.

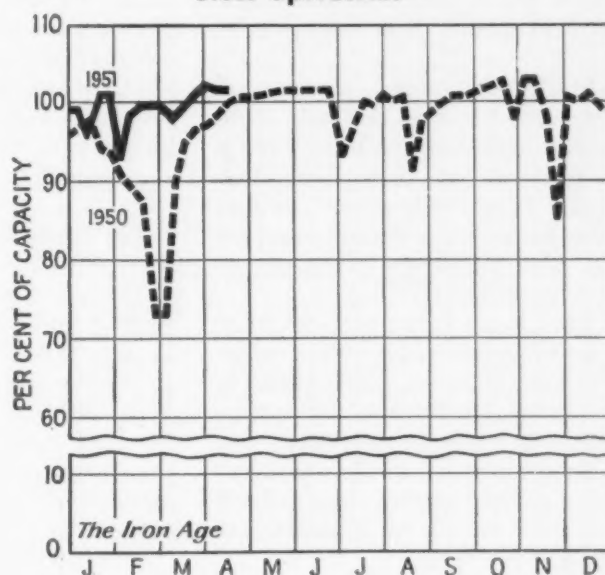
**alloy steels**—Output of triple alloy steels rose 69 pct during the last 6 months of 1950 as steel companies stretched supplies of short alloying materials. Production of nickel-chromium steel was down 37 pct, and nickel-molybdenum output was down 47 pct in the same period.

**going, going, gone**—"Free" stainless steel is practically non-existent as far as some producers are concerned. One stainless maker says his entire stainless production made from nickel allotments is going into defense orders. This is well over 90 pct. Only tonnage sold without DO's is made from nickel bearing scrap. Another producer reports 97 pct of stainless output going into DO's. Buyers who formerly bought rings by the hundreds are now asking for them by the ten thousands.

**fabricators worried**—Government and utility company practice of taking standard lengths of concrete reinforcing bars is beginning to worry eastern fabricators. Sure, they're selling steel but they are afraid their shop work will drop off.

**coke easing?**—One eastern coke supplier reported that buying pressure had eased up somewhat a week ago. He isn't taking any bets on how long it will last. Pig iron showed no such change—if anything, it is getting tighter.

Steel Operations\*\*



District Operating Rates—Per Cent of Capacity\*\*

Week of	Pittsburgh	Chicago	Youngstown	Philadelphia	West	Buffalo	Cleveland	Detroit	Wheeling	South	Ohio River	St. Louis	East	Aggregate
Apr. 1	99.0*	105.0*	95.0	100.0	104.0	104.0	96.0*	104.0	99.0	102.5	92.5	90.6	90.2	102.5
Apr. 8	99.0	105.0	95.0	100.0	104.0	104.0	99.0	104.0	98.0	97.0	92.0	92.4	112.6	102.5

\* Revised.

\*\* Beginning Jan. 1, 1951, operations are based on annual capacity of 104,229,650 net tons.

# nonferrous metals

outlook and  
market activities

## NONFERROUS METALS PRICES

	Apr. 4	Apr. 5	Apr. 6	Apr. 7	Apr. 9	Apr. 10
Copper, electro, Conn....	24.50	24.50	24.20	24.20	24.50	24.50
Copper, Lake delivered...	24.625	24.625	24.625	24.625	24.625	24.625
Tin, Straits, New York....	\$1.50	\$1.49 $\frac{7}{8}$	\$1.50	....	\$1.505	\$1.505*
Zinc, East St. Louis .....	17.50	17.50	17.50	17.50	17.50	17.50
Lead, St. Louis .....	16.80	16.80	16.80	16.80	16.80	16.80

Note: Quotations are going prices.

\*Tentative.



by R. Hatschek

**Tariff Suspension Near**—The House of Representatives has passed H. R. 3336, the bill which would suspend the copper import tariff until Feb. 15, 1953 provided that the price does not drop below 24¢ per lb. The Senate is now considering passage of the bill and it would seem that there is a good chance it will become law.

**Stocks Dangerous**—Demand pressure for scrap metals continues high and dealers' buying prices took another spurt last week. Turnover is as fast as possible because the dealers consider any high-priced stocks dangerous to have on hand.

The trade is expecting sharp cuts in scrap metal prices when the long overdue price order is issued by the Office of Price Stabilization. Prices at present are fantastically out of line with respect to the pegged prices of both primary metals and secondary ingot.

**Lead Question**—Battery manufacturers have objected to the severity of the recent lead cutback order limiting them to 100 pct of their consumption for the first half of 1950. As was pointed out in this column last week, this amounts to a cutback of some 31

pct of current use. Their objection was mainly based on the seasonal nature of their business.

Producers, on the other hand, thought that these objections came too soon. Their point was that since battery makers' needs are higher in the second half, National Production Authority has the time during May and June to see just how well the system will work. Then, if the need should become evident, adjustments could be made in time for the heavier requirements of the second half.

**Tin Confusion Mounts**—Last week, with Reconstruction Finance Corp. maintaining its tin price at \$1.50 $\frac{1}{2}$  per lb, other traders undersold the RFC by  $\frac{1}{2}$ ¢ or 1¢ per lb. RFC was also offered some tin at \$1.49 $\frac{1}{2}$  but refused to buy, stating simply that they were not in the market for the day. Total RFC sales for the week dropped to 335 tons of all grades.

Meanwhile, the Bolivian tin producers made a formal reply to Senator Johnson's committee report. The reply pointed out that the subcommittee had studied the market only back to mid-1950 and then went further to quote statistics back to 1939, comparing the tin price with other metals and farm products.

**World War II Effects**—Besides citing increased labor costs, the Bolivians claimed that the higher grades of ore had been sapped greatly during the period of World War II when high production was practically the only consideration.

The general feeling of the reply was one of thoughtlessness of U. S. agencies in regard to the Bolivian tin producers.

**Says Output May Dip**—A House mines committee last week heard that present government price regulations might discourage production of vitally needed metals. Dr. James Boyd, Bureau of Mines director, authored the statement but did not specify any particular metal. His was a long range point that had to do with exploration, research and development.

At a later time, Dr. Boyd did mention that, while an increase in the copper price would have a definite effect upon the nation's economy because of the large quantities used, an increase in a metal like tungsten would not contribute as profoundly to inflation. He also stated that an increase in the price of copper would bring about increased production but not immediately.



## MILL PRODUCTS

(Cents per lb, unless otherwise noted)

## Aluminum

(Base 30,000 lb, f.o.b. ship. pt. frt. allowed)

Flat Sheet: 0.188 in., 2S, 3S, 30.1¢; 4S, 61S-O, 32¢; 52S, 34.1¢; 24S-O, 24S-OAL, 32.9¢; 75S-O, 75S-OAL, 39.9¢; 0.081 in., 2S, 3S, 31.2¢; 4S, 61S-O, 33.5¢; 52S, 35.6¢; 24S-O, 24S-OAL, 34.1¢; 75S-O, 75S-OAL, 41.8¢; 0.082 in., 2S, 3S, 32.9¢; 4S, 61S-O, 37.1¢; 52S, 39.8¢; 24S-O, 24S-OAL, 41.7¢; 75S-O, 75S-OAL, 52.2¢.

Plate: 1/4 in. and heavier: 2S, 3S-F, 28.3¢; 4S-F, 30.2¢; 52S-F, 31.8¢; 61S-O, 30.8¢; 24S-O, 24S-OAL, 32.4¢; 75S-O, 75S-OAL, 38.8¢.

Extruded Solid Shapes: Shape factors 1 to 5, 36.2¢ to 74.5¢; 12 to 14, 36.9¢ to 89¢; 24 to 26, 39.6¢ to 116¢; 36 to 38, 47.2¢ to 170¢.

Rod, Rolled: 1.5 to 4.5 in., 2S-F, 3S-F, 37.5¢ to 33.5¢; cold-finished, 0.375 to 3 in., 2S-F, 3S-F, 40.5¢ to 35¢.

Screw Machine Stock: Rounds, 11S-T8, 1/4 to 1 1/32 in., 53.5¢ to 42¢; 3/8 to 1 1/2 in., 41.5¢ to 39¢; 1 9/16 to 3 in., 38.5¢ to 36¢; 17S-T4 lower by 1.5¢ per lb. Base 5000 lb.

Drawn Wire: Coiled, 0.051 to 0.374 in., 2S, 39.5¢ to 29¢; 52S, 43¢ to 35¢; 56S, 51¢ to 42¢; 17S-T4, 54¢ to 37.5¢; 61S-T4, 48.5¢ to 37¢; 75S-T8, 84¢ to 67.5¢.

Extruded Tubing: Rounds: 6S-S-T5, OD in in.: 1 1/4 to 2, 37¢ to 54¢; 2 to 4, 33.5¢ to 45.5¢; 4 to 6, 34¢ to 41.5¢; 6 to 9, 34.5¢ to 48.5¢.

Roofing Sheet, Flat: 0.019 in. x 28 in. per sheet, 72 in., \$1.142; 96 in., \$1.522; 120 in., \$1.902; 144 in., \$2.284. Gage 0.024 in. x 28 in., 72 in., \$1.379; 96 in., \$1.839; 120 in., \$2.299; 144 in., \$2.759. Coiled Sheet: 0.019 in. x 28 in., 28.2¢ per lb.; 0.024 in. x 28 in., 26.9¢ per lb.

## Magnesium

(F.o.b. mill, freight allowed)

Sheet and Plate: F81-O, 1/4 in., 63¢; 3/16 in., 65¢; 1/8 in., 67¢; B & S Gage 10, 68¢; 12, 72¢; 14, 75¢; 16, 85¢; 18, 93¢; 20, \$1.05; 22, \$1.27; 24, \$1.67. Specification grade higher. Base: 30,000 lb.

Extruded Round Rod: M. diam in., 1/4 to 0.311 in., 74¢ to 1/2 in., 57.5¢; 1/2 to 1.749 in., 53¢; 2 1/2 to 5 in., 48.5¢. Other alloys higher. Base: Up to 1/4 in. diam, 10,000 lb; 1/4 to 2 in., 20,000 lb; 2 in. and larger, 30,000 lb.

Extruded Solid Shapes, Rectangles: M. In weight per ft. for perimeters less than size indicated. 0.10 to 0.11 lb, 3.5 in., 62.3¢; 0.22 to 0.25 lb, 5.9 in., 59.3¢; 0.50 to 0.59 lb, 8.6 in., 56.7¢; 1.8 to 2.59 lb, 19.5 in., 53.8¢; 4 to 6 lb, 28 in., 49¢. Other alloys higher. Base, in weight per ft. of shape: Up to 1/2 lb, 10,000 lb; 1/2 to 1.80 lb, 20,000 lb; 1.80 lb and heavier, 30,000 lb.

Extruded Round Tubing: M. wall thickness, outside diam, in., 0.049 to 0.057, 1/4 in. to 5/16, \$1.40; 5/16 to 3/8, \$1.26; 3/8 to 1/2, \$9¢; 1 to 2 in., 76¢; 0.165 to 0.219, 3/4 to 1, 61¢; 1 to 2 in., 57¢; 3 to 4 in., 56¢. Other alloys higher. Base, OD in in.: Up to 1 1/4 in., 10,000 lb; 1 1/4 in. to 3 in., 20,000 lb; 3 in. and larger, 30,000 lb.

## Titanium

(10,000 lb base, f.o.b. mill)

Commercially pure and alloy grades: Sheet and strip, HR or CR, \$15; Plate, HR, \$12; Wire, rolled and/or drawn, \$10; Bar, HR or forged, \$6; Forgings, \$6.

## Nickel and Monel

(Base prices, f.o.b. mill)

"A" Nickel Monel

	Sheets, cold-rolled	Strip, cold-rolled	Rods and bars	Angles, hot-rolled	Plates	Seamless tubes	Shot and blocks
	71 1/4	77 1/4	67 1/4	67 1/4	69 1/4	100 1/2	50
	57	60	55	55	56	96	50

## Copper, Brass, Bronze

(Freight prepaid on 200 lb includes duty)

	Sheet	Rods	Shapes
Copper	41.03		40.63
Copper, h-r		36.88	
Copper, drawn		38.18	
Low brass	39.15	38.84	
Yellow brass	38.28	37.97	
Red brass	40.14	39.83	
Naval brass	43.08	38.61	38.07
Leaded brass		32.63	36.70
Com'l bronze	41.13	40.82	
Mang. bronze	45.96	40.65	41.41
Phos. bronze	60.20	60.45	
Muntz metal	40.43	36.74	37.99
Ni silver, 10 pct	49.27	51.49	
Arch. bronze			35.11

## PRIMARY METALS

(Cents per lb, unless otherwise noted)

Aluminum ingot, 99+%, 10,000 lb, freight allowed ..... 19.00  
Aluminum pig ..... 18.00  
Antimony, American, Laredo, Tex. .... 42.00  
Beryllium copper, 3.75-4.25% Be. .... \$1.56  
Beryllium aluminum 5% Be, Dollars per lb contained Be. .... \$69.00  
Bismuth, ton lots ..... \$2.25  
Cadmium, del'd ..... \$2.55  
Cobalt, 97-99% (per lb) ..... \$2.10 to \$2.17  
Copper, electro, Conn. Valley ..... 24.50  
Copper, Lake, delivered ..... 24.625  
Gold, U. S. Treas., dollars per oz. .... \$35.00  
Indium, 99.8%, dollars per troy oz. .... \$2.25  
Iridium, dollars per troy oz. .... \$200  
Lead, St. Louis ..... 16.80  
Lead, New York ..... 17.00  
Magnesium, 99.8+%, f.o.b. Freeport, Tex., 10,000 lb. .... 24.50  
Magnesium, sticks, 100 to 500 lb ..... 42.00 to 44.00  
Mercury, dollars per 76-lb flask, f.o.b. New York ..... \$216-\$220  
Nickel, electro, f.o.b. New York ..... 53.55  
Nickel oxide sinter, f.o.b. Copper Cliff, Ont., contained nickel ..... 46.75  
Palladium, dollars per troy oz. .... \$24.00  
Platinum, dollars per troy oz. .... \$90 to \$93  
Silver, New York, cents per oz. .... 90.16  
Tin, New York ..... \$1.505  
Titanium, sponge ..... \$5.00  
Zinc, East St. Louis ..... 17.50  
Zinc, New York ..... 18.25  
Zirconium copper, 50 pct. .... \$6.20

## REMELTED METALS

## Brass Ingot

(Cents per lb delivered, carloads)

85-5-5-5 ingot  
No. 115 ..... 29.00  
No. 120 ..... 28.50  
No. 123 ..... 28.00  
80-10-10 ingot  
No. 305 ..... 35.00  
No. 315 ..... 32.00  
88-10-2 ingot  
No. 210 ..... 47.50  
No. 215 ..... 44.50  
No. 245 ..... 37.00  
Yellow ingot  
No. 405 ..... 25.50  
Manganese bronze  
No. 421 ..... 32.75

## Aluminum Ingot

(Cents per lb, 30,000 lb lots)

95-5 aluminum-silicon alloys  
0.30 copper, max. .... 34.50-36.25  
0.60 copper, max. .... 34.25-36.00  
Piston alloys (No. 122 type) ..... 31.00-32.50  
No. 12 alum. (No. 2 grade) ..... 30.25-31.25  
108 alloy ..... 31.50-32.00  
195 alloy ..... 32.50-33.00  
13 alloy ..... 34.50-36.00  
ASX-679 ..... 31.50-33.25

## Steel deoxidizing aluminum, notch-bar granulated or shot

Grade 1-95.97 1/2% ..... 32.50-33.50  
Grade 2-92-95% ..... 31.50-32.50  
Grade 3-90-92% ..... 30.50-31.50  
Grade 4-85-90% ..... 29.50-30.50

## ELECTROPLATING SUPPLIES

## Anodes

(Cents per lb, freight allowed, 500 lb lots)

Copper  
Cast, oval, 15 in. or longer ..... 39 1/4  
Electrodeposited ..... 33 1/2  
Rolled, oval, straight, delivered ..... 38 1/2  
Forged ball anodes ..... 43  
Brass, 80-20  
Cast, oval, 15 in. or longer ..... 34 1/4  
Zinc, oval ..... 26 1/4  
Ball anodes ..... 25 1/4  
Nickel 99 pct plus  
Cast ..... 70.50  
Rolled, depolarized ..... 71.50  
Cadmium ..... \$2.80  
Silver 999 fine, rolled, 100 oz lots, per troy oz, f.o.b. Bridgeport, Conn. .... 79 1/2

## Chemicals

(Cents per lb, f.o.b. shipping points)

Copper cyanide, 100 lb drum ..... 52.15  
Copper sulfate, 99.5 crystals, bbl. .... 12.85  
Nickel salts, single or double, 4-100 lb bags, frt. allowed ..... 20 1/2  
Nickel chloride, 375 lb drum ..... 27 1/2  
Silver cyanide, 100 oz lots, per oz. .... 67 1/4  
Sodium cyanide, 96 pct domestic 200 lb drums ..... 19.25  
Zinc cyanide, 100 lb drums ..... 45.85

## SCRAP METALS

## Brass Mill Scrap

(Cents per pound, add 1/2¢ per lb for shipments of 20,000 to 40,000 lb; add 1¢ for more than 40,000 lb)

	Heavy	Turnings
Copper	23	22 1/4
Yellow Brass	20 1/2	18 1/2
Red brass	21 1/2	20 1/2
Comm. bronze	21 1/2	21
Mang. bronze	19 1/2	18 1/2
Brass rod ends	19 1/2	

## Custom Smelters' Scrap

(Cents per pound, carload lots, delivered to refinery)

No. 1 copper wire	21.50
No. 2 copper wire	20.00
Light copper	19.00
Refinery brass	19.50*
Radiators	15.00

\*Dry copper content.

## Ingot Makers' Scrap

(Cents per pound, carload lots, delivered to producer)

No. 1 copper wire	23.00-29.00
No. 2 copper wire	25.00-26.00
Light copper	23.50-24.50
No. 1 composition	25.00-25.50
No. 1 comp. turnings	24.50-25.00
Rolled brass	19.00
Brass pipe	20.50
Radiators	19.00-19.50
Heavy yellow brass	19.00-19.50

## Aluminum

Mixed old cast	21	—22
Mixed new clips	24	—25
Mixed turnings, dry	21	—21 1/2
Pots and Pans	21	—22
Low copper		25

## Dealers' Scrap

(Dealers' buying prices, f.o.b. New York in cents per pound)

## Copper and Brass

No. 1 heavy copper and wire	25 1/2	—26 1/2
No. 2 heavy copper and wire	24	—25
Light copper	22	—22 1/2
New type shell cuttings	22	—22 1/2
Auto radiators (unsweated)	17 1/2	—18
No. 1 composition	22	—23
No. 1 composition turnings	21	—22
Clean red ear boxes	19	—19 1/2
Cocks and faucets	19	—19 1/2
Mixed heavy yellow brass	16 1/2	—17
Old rolled brass	18 1/2	—19
Brass pipe	20	—20 1/2
New soft brass clippings	20	—21
Brass rod ends		19 1/2
No. 1 brass rod turnings		19

## Aluminum

Alum. pistons and struts	13	—13 1/2
Aluminum crankcases	16 1/2	—17
2S aluminum clippings	20 1/2	—21
Old sheet and utensils	16 1/2	—17
Borings and turnings	12 1/2	—13
Misc. cast aluminum	16 1/2	—17
Dural clips (24S)	16 1/2	—17

## Zinc

New Zinc clippings	17	—18
Old Zinc	12 1/2	—13
Zinc routings	8 1/2	—9
Old die cast scrap	8	—8 1/2

## Nickel and Monel

Pure nickel clippings	90	—100
Clean nickel turnings	80	—90
Nickel anodes	90	—100
Nickel rod ends	90	—100
New Monel clippings	30	—35
Clean Monel turnings	20	—25
Old sheet Monel	25	—30
Inconel clippings	30	—35
Nickel silver clippings, mixed	16	—18
Nickel silver turnings, mixed	15	—16

## Lead

Soft scrap, lead	16 1/2	—16 3/4
Battery plates (dry)	9 1/2	—10

## Magnesium

Segregated solids	9	—10
Castings	5 1/2	—6 1/2

## Miscellaneous

Block tin	110	—120
No. 1 pewter	80	—85
No. 1 auto babbitt	75	—80
Mixed common babbitt	16	—17
Solder joints	23	—24
Siphon tops	75	—80
Small foundry type	18 1/2	—19
Monotype	17 1/2	—18
Lino. and stereotype	17	
Electrotype	15 1/2	—16
Hand picked type shells	11 1/2	—11 3/4
Lino. and stereo. dross	9 1/2	—10
Electro. dross	7 1/2	—8

# SCRAP *iron and steel*

*markets  
prices  
trends*

**Demand, need for scrap still ahead of collections . . . Pittsburgh openhearthers compete for machine shop turnings.**

Most major steelmaking centers continue to sing the scrap blues. Collections have been inching to better levels but demand and need are still ahead in the race.

Pittsburgh openhearthers are competing with blast furnaces for machine shop turnings. Receipts are off 75 pct from last year. The cry for allocations is not abating and some Pittsburgh foundries are threatened with shutdowns.

Cleveland and the Valley showed a slight improvement in collections but the shortage has left an awful deficit to overcome. One mill there had only a 2-day supply on hand and another 2-day shipment coming. Chicago scrap remained tight.

Detroit was confused after the OPS regulation raising the basing point price to \$41.15 for No. 1 heavy but not making it retroactive. Mills are sending invoices for credit to brokers who will probably pass them on to dealers. The dealer thus holds the short end of the stick. He must try to get credits from peddlers.

On the sunshine side of the ledger, the flow of rural scrap to St. Louis was "considerably improved" and Birmingham reported enough scrap coming into the area to put most users in "fairly comfortable shape."

**PITTSBURGH**—Openhearthers are competing with blast furnaces for machine shop turnings with the result there is a growing scarcity of short turnings. Pittsburgh district crushers say their machine shop turnings receipts are off 75 pct from last year. Some crushers are working only 2 or 3 days per week. Normal flow of machine shop turnings to the crushers has been disrupted by openhearth operators grabbing off the mate-

rial for their melts. Practically all mills in this area are receiving scrap on allocation and pressing for more. Inventories are uncomfortably low. Some foundries are in desperate shape, and shutdowns may result. One foundry, with only a week's supply on hand, appealed to NPA for an allocation. The best delivery promise they could get was 45 days. Upgrading is becoming commonplace.

**CHICAGO**—Scrap supply in the area remains tight with brokers reporting great difficulty in obtaining anything but allocated materials. Some report being unable to pick up any tonnage without offering something in return. Mills are stepping up buying of unprepared material with some coming in from remote areas. They are also offering to pay higher springboards. Mills in outlying areas are reported in far worse shape inventory-wise than those in Chicago.

**PHILADELPHIA**—Junk collectors are now running into some difficulty in selling waste paper and that market has dropped somewhat. That, plus much better weather, will mean improved flow of steel, particularly light scrap, from this source. Though mill inventories are still fading, they are not dropping as fast.

**NEW YORK**—Last week's improvement in scrap collections held good this week but it was nothing to rave about in view of the very hot demand of consumers. Cast is strong and the current shortage has hit this item more heavily than other grades. Production is being maintained but mills are still tapping inventory. Some here feel that sources had been hit too hard in January for any great improvement in collections.

**DETROIT**—Conditions in the area are still unsettled following the OPS regulation of Mar. 27—settling the basing point price of No. 1 heavy melting steel at \$41.15 per gross ton, but not making it retroactive to Mar. 7th. Mills in the area are sending back invoices to brokers for issuance of credit. However, some plants in the area have not as yet done so in turn. Dealers are faced with the difficult task of recovering credits from peddlers and are expected to suffer most. It will be some time before the situation returns to normal. Scrap continues to move slowly with all industrial scrap being allocated. Some mills are starting to take in scrap by truck loads.

**CLEVELAND**—Shipments are improving slightly here and in the Valley, but the shortage of scrap remains acute. One mill has 2 days' supply on the ground and another 2-days' melt in transit. A month ago, the movement of scrap was off an estimated 60 pct from the pre-regulation level. This week, it is off an estimated 25 pct. Some mills are clamping down on grading, which will slow up the movement of free dealer scrap. Rejections are increasing, which may be the result of OPS influence.

**ST. LOUIS**—The flow of scrap iron from rural districts to the St. Louis industrial area showed considerable improvement during the week as a result of better weather conditions in most producing territories. Receipts are still far short of demand, however.

**BIRMINGHAM**—Sufficient scrap is coming into the district now and most users are in fairly comfortable shape. Cut plate and structural steel items are scarce, as is No. 1 cast, but nearly all other categories are in good shape. There is not as much upgrading now as there was for a time after ceilings went into effect.

**CINCINNATI**—A terrific demand for all grades is making a contest out of the scrap market here. Mills and smaller foundries desperately need material and are pressing relentlessly for shipment. In the case of the smaller foundries, brokers are beginning to take loads, not cars. One mill was at the point of curtailing operations over the weekend but was saved by a few cars which came in at the last minute. Despite the nature of the market here, upgrading has been kept to a minimum.

**BOSTON**—Activity in the local scrap market remained steady during the past week. Shipments were normal. Dealers are still hoping for clarification of freight rates by OPS to permit a barge rate.

**BUFFALO**—Decided improvement was noted in scrap collections this week. One of the leading mills was able to maintain production without tapping stocks. The moderate pickup cheered the trade after supplies had started to shrink. The first 9500 tons from the Upper Lake Region arrived by boat. Bethlehem's Lackawanna shut down one of its basic iron blast furnaces for relining.

# Big Name on the Scrap Map

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Iron and Steel

SCRAP PRICES

(Maximum basing point prices, per gross ton, as set by OPS, effective Feb. 7, 1951. Shipping point and delivered prices calculated as shown below.)

GRADES	OPS No.	Basing Points															
		Pittsburgh	Johnstown	Brackenridge	Builer	Midland	Monessen	Sharon	Youngstown	Canton	Steubenville	Warren	Cleveland	Buffalo	Cincinnati	Middletown	Chicago
No. 1 heavy melting	1	\$44.00	\$44.00	\$43.00	\$42.50	\$42.00	\$41.00	\$41.15	\$40.00	\$39.50	\$39.00	\$38.00	\$37.00	\$36.00	\$35.00	\$34.00	\$33.00
No. 2 heavy melting	2	42.00	42.00	41.00	40.50	40.00	39.00	39.15	38.00	37.50	37.00	36.00	35.00	34.00	33.00	32.00	31.00
No. 1 busheling	3	44.00	44.00	43.00	42.50	42.00	41.00	41.15	40.00	39.50	39.00	38.00	37.00	36.00	35.00	34.00	33.00
No. 1 bundles	4	44.00	44.00	43.00	42.50	42.00	41.00	41.15	40.00	39.50	39.00	38.00	37.00	36.00	35.00	34.00	33.00
No. 2 bundles	5	41.00	41.00	40.00	39.50	39.00	38.00	38.15	37.00	36.50	36.00	35.00	34.00	33.00	32.00	31.00	30.00
Machine shop turnings	6	34.00	34.00	33.00	32.50	32.00	31.00	31.15	30.00	29.50	29.00	28.00	27.00	26.00	25.00	24.00	23.00
Mixed borings and turnings	7	36.00	36.00	35.00	34.50	34.00	33.00	33.15	32.00	31.50	31.00	30.00	29.00	28.00	27.00	26.00	25.00
Shovelling turnings	8	38.00	38.00	37.00	36.50	36.00	35.00	35.15	34.00	33.50	33.00	32.00	31.00	30.00	29.00	28.00	27.00
Cast iron borings	10	38.00	38.00	37.00	36.50	36.00	35.00	35.15	34.00	33.50	33.00	32.00	31.00	30.00	29.00	28.00	27.00
No. 1 chemical borings	26	41.00	41.00	40.00	39.50	39.00	38.00	38.15	37.00	36.50	36.00	35.00	34.00	33.00	32.00	31.00	30.00
Forge crops	11	51.50	51.50	50.50	50.00	49.50	48.50	48.65	47.50	47.00	46.50	45.50	44.50	43.50	42.50	41.50	40.50
Bar crops and plate	12	49.00	49.00	48.00	47.50	47.00	46.00	46.15	45.00	44.50	44.00	43.00	42.00	41.00	40.00	39.00	38.00
Punchings and plate	14	46.50	46.50	45.50	45.00	44.50	43.50	43.65	42.50	42.00	41.50	40.50	39.50	38.50	37.50	36.50	35.50
Electric furnace bundles	15	46.00	46.00	45.00	44.50	44.00	43.00	43.15	42.00	41.50	41.00	40.00	39.00	38.00	37.00	36.00	35.00
Cut struct., plate, 3 ft and less	16	47.00	47.00	46.00	45.50	45.00	44.00	44.15	43.00	42.50	42.00	41.00	40.00	39.00	38.00	37.00	36.00
Cut struct., plate, 2 ft and less	17	49.00	49.00	48.00	47.50	47.00	46.00	46.15	45.00	44.50	44.00	43.00	42.00	41.00	40.00	39.00	38.00
Cut struct., plate, 1 ft and less	18	50.00	50.00	49.00	48.50	48.00	47.00	47.15	46.00	45.50	45.00	44.00	43.00	42.00	41.00	40.00	39.00
Foundry steel, 2 ft and less	20	46.00	46.00	45.00	44.50	44.00	43.00	43.15	42.00	41.50	41.00	40.00	39.00	38.00	37.00	36.00	35.00
Foundry steel, 1 ft and less	21	48.00	48.00	47.00	46.50	46.00	45.00	45.15	44.00	43.50	43.00	42.00	41.00	40.00	39.00	38.00	37.00
Heavy trimmings	24	43.00	43.00	42.00	41.50	41.00	40.00	40.15	39.00	38.50	38.00	37.00	36.00	35.00	34.00	33.00	32.00
No. 1 RR heavy melting	RR 1	46.00	46.00	45.00	44.50	44.00	43.00	43.15	42.00	41.50	41.00	40.00	39.00	38.00	37.00	36.00	35.00
Scrap rails, random lengths	RR 14	48.00	48.00	47.00	46.50	46.00	45.00	45.15	44.00	43.50	43.00	42.00	41.00	40.00	39.00	38.00	37.00
Scrap rails, 3 ft and less	RR 16	51.00	51.00	50.00	49.50	49.00	48.00	48.15	47.00	46.50	46.00	45.00	44.00	43.00	42.00	41.00	40.00
Scrap rails, 2 ft and less	RR 17	52.00	52.00	51.00	50.50	50.00	49.00	49.15	48.00	47.50	47.00	46.00	45.00	44.00	43.00	42.00	41.00
Scrap rails, 18 in. and less	RR 18	54.00	54.00	53.00	52.50	52.00	51.00	51.15	50.00	49.50	49.00	48.00	47.00	46.00	45.00	44.00	43.00
Re-rolling rails	RR 15	53.00	53.00	52.00	51.50	51.00	50.00	50.15	49.00	48.50	48.00	47.00	46.00	45.00	44.00	43.00	42.00
Uncut tires	RR 20	48.00	48.00	47.00	46.50	46.00	45.00	45.15	44.00	43.50	43.00	42.00	41.00	40.00	39.00	38.00	37.00
Cut tires	RR 21	51.00	51.00	50.00	49.50	49.00	48.00	48.15	47.00	46.50	46.00	45.00	44.00	43.00	42.00	41.00	40.00
Cut bolsters and side frames	RR 23	49.00	49.00	48.00	47.50	47.00	46.00	46.15	45.00	44.50	44.00	43.00	42.00	41.00	40.00	39.00	38.00
RR specialties	RR 24, 26, 29	51.00	51.00	50.00	49.50	49.00	48.00	48.15	47.00	46.50	46.00	45.00	44.00	43.00	42.00	41.00	40.00
Solid steel axles	RR 25	58.00	58.00	57.00	56.50	56.00	55.00	55.15	54.00	53.50	53.00	52.00	51.00	50.00	49.00	48.00	47.00
No. 3 steel wheels	RR 27	51.00	51.00	50.00	49.50	49.00	48.00	48.15	47.00	46.50	46.00	45.00	44.00	43.00	42.00	41.00	40.00

Cast Scrap

Grades	OPS No.	(F.o.b. all shipping points)
Cupola cast	1	\$49.00
Charging box cast	2	47.00
Heavy breakable cast	3	45.00
Cast iron brake shoes	5	41.00
Stove plate	6	46.00
Clean auto cast	7	52.00
Unstripped motor blocks	8	43.00
Cast iron carwheels	9	47.00
Malleable	10	56.00
Drop broken mach'y. cast	11	52.00

**SWITCHING DISTRICTS**—These basing points include the indicated switching districts: Pittsburgh; Bessemer, Homestead, Duquesne, Munhall, Cincinnati; Newport, St. Louis; Granite City, East St. Louis, Madison, San Francisco; South San Francisco, Niles, Oakland, Claymont; Chester, Chicago; Gary, Los Angeles; Firestone.

**SHIPPING POINT PRICES** (Except RR scrap)—For shipping points within basing points, the ceiling shipping point price is the basing point price, less switching charge. The ceiling for shipping points outside basing points is the basing point price yielding the highest shipping point price, less the lowest established freight charge. Dock charge, where applicable, is \$1.25 per gross ton except: Memphis, 95¢; Great Lakes ports, \$1.50, and New England ports, \$1.75. Maximum shipping point price on No. 1 heavy melting steel in New York City is \$36.99 per gross ton with set differentials for other grades. Hudson and Bergen County, N. J., shipping point prices are computed from Bethlehem basing point. All New Jersey computations use all-rail transport. Ceiling need not fall below \$32 per gross ton for No. 1 heavy melting steel, with set differentials for other grades. Cast scrap shipping point prices are given in table.

**DELIVERED PRICES** (RR scrap)—Ceiling on-line price of a RR operating in a basing point is the top in the highest priced basing point in which the RR operates. For off-line prices, RR's not operating in basing point, non-operating RR's, and RR scrap sold by

someone other than a RR see text of order, THE IRON AGE, Feb. 8, 1951, p. 137-C.

**DELIVERED PRICES** (Except RR scrap)—Ceiling is the shipping point price plus actual freight charge, tax included. Dock charges, where applicable, are as above.

**UNPREPARED SCRAP**—Ceiling price is \$8 a ton less than prepared base grades (No. 1 heavy & No. 1 RR heavy). Scrap suitable for compressing into No. 1 bundles is \$6 less than No. 1 bundles; suitable for compressing into No. 2 bundles, \$8 less than No. 2 bundles. For cast material requiring special preparation, price is breakable cast less preparation costs.

**COMMISSIONS**—Brokers are permitted a maximum of \$1 per gross ton commission which must be separate on the bill.

**ALLOY PREMIUMS**—These alloy extras are permitted: Nickel; \$1.25 may be added to price of No. 1 heavy for each 0.25 pct nickel between 1 and 5.25 pct. Molybdenum; \$2 may be added to price of No. 1 heavy for molybdenum over 0.15 pct, \$3 for content over 0.65 pct. Manganese; \$4 may be added to price of No. 1 heavy or No. 1 RR heavy for content over 10 pct if scrap is in sizes over 8 x 12 x 24 in., \$14 if less than 8 x 12 x 24 in. Manganese premium applicable only if sold for electric furnace use or on NPA allocation. Silicon; electric furnace and foundry grade adjustments are not applicable if silicon content is between 0.5 and 1.75 pct. Chromium; \$1 may be added if scrap conforms to SAE 52100 analysis and is to be used in an electric furnace. In no case is price to exceed No. 1 heavy by more than \$1. Multiple Alloys; if scrap contains two premium alloy elements, total premium may not exceed ceiling premium for any one contained alloy.

**RESTRICTIONS ON USE**—Ceiling prices on some scrap items may fluctuate with use by consumers. If some scrap is purchased for its established specialized use, the ceiling price set in the order stands. But if some special grades are purchased for other uses, the ceiling price charge shall be the price of the scrap grade being substituted. For example, the price established for Grade 28 (wrought iron) may be charged only when sold to a producer of wrought iron. Otherwise the ceiling price shall not exceed the ceiling price for the corresponding grade of basic openhearth. Re-

strictions on use are placed on the following grades: Chemical borings, wrought iron and re-rolling rails. Ceiling prices on billet bloom and forge crops, alloy-free turnings, and heavy turnings may be charged only when shipped directly from industrial producer. NPA prohibits openhearth users from buying electric furnace grades, Nos. 11 through 18, foundry grades, Nos. 20 and 21 and cast grades, 1, 7, 9 and 11.

CEILING INTRANSIT PREPARATION CHARGES (Dollars per gross ton)

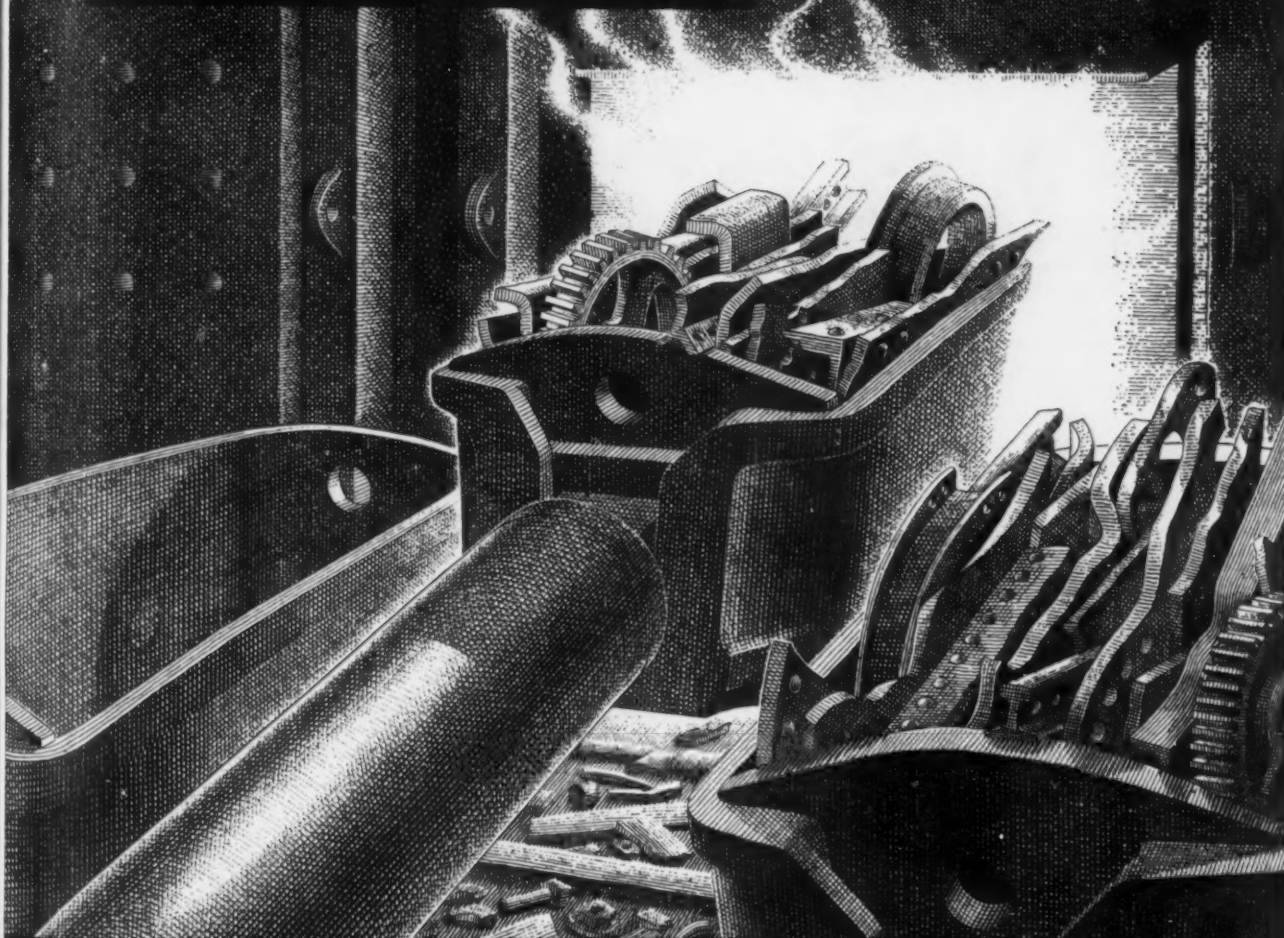
No. 1 heavy; No. 2 heavy; No. 1 RR heavy; No. 2 RR heavy; No. 1 busheling; No. 2 bundles; electric furnace bundles	\$ 8.00
No. 1 bundles; briquetted turnings or cast iron borings; No. 1 RR sheet scrap	6.00
Crushing machine shop turnings	2.00
Bar crops and plate; punchings and plate; structural and plate, 1 ft & less, and 3 ft and less; foundry steel, 1 ft & less and 2 ft & less; wrought iron	10.00
Rails, 3 ft & less; cut tires; cut bolsters & side frames	4.00
Rails, 2 ft & less	5.00
Rails, 18 in. & less	7.00

Hamilton, Ontario

(Consumers buying prices, del'd gross ton)	
Hvy. melting steel	\$30.00
No. 1 bundles	30.00
No. 2 bundles	29.50
Mechanical bundles	23.00
Mixed, steel scrap	26.00
Rails, remelting	30.00
Rails, re-rolling	33.00
Bushelings	24.50
Bushelings, prepared new factory	23.00
Bushelings, unprepared new factory	23.00
Short steel turnings	23.00
Mixed borings, turnings	23.00
Cast scrap	48.00 to 58.00

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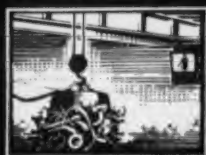
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**LEADERS IN IRON AND STEEL SCRAP SINCE 1889**



## Comparison of Prices

Steel prices in this page are the average of various f.o.b. quotations of major producing areas: Pittsburgh, Chicago, Gary, Cleveland, Youngstown.

Flat-Rolled Steel:	Apr. 10, 1951	Apr. 3, 1951	Mar. 13, 1951	Apr. 11, 1950
(cents per pound)				
Hot-rolled sheets	3.60	3.60	3.60	3.35
Cold-rolled sheets	4.35	4.35	4.35	4.10
Galvanized sheets (10 ga)	4.80	4.80	4.80	4.40
Hot-rolled strip	3.50	3.50	3.50	3.25
Cold-rolled strip	4.75	4.75	4.75	4.21
Plate	3.70	3.70	3.70	3.50
Plates wrought iron	7.85	7.85	7.85	7.85
Stains C-R-strip (No. 302)	36.50	36.50	36.50	33.00

### Tin and Terneplate:

(dollars per base box)				
Tinplate (1.50 lb) cokes	\$7.50	\$7.50	\$7.50	\$7.50
Tinplate, electro (0.50 lb)	6.60	6.60	6.60	6.60
Special coated mfg. ternes	6.35	6.35	6.35	6.50

### Bars and Shapes:

(cents per pound)				
Merchant bars	3.70	3.70	3.70	3.45
Cold finished bars	4.55	4.55	4.55	*4.145
Alloy bars	4.30	4.30	4.30	3.95
Structural shapes	3.65	3.65	3.65	3.40
Stainless bars (No. 302)	31.25	31.25	31.25	28.50
Wrought iron bars	9.50	9.50	9.50	9.50

### Wire:

(cents per pound)				
Bright wire	4.85	4.85	4.85	4.50

### Rails:

(dollars per 100 lb)				
Heavy rails	\$3.60	\$3.60	\$3.60	\$3.40
Light rails	4.00	4.00	4.00	3.75

### Semifinished Steel:

(dollars per net ton)				
Rerolling billets	\$56.00	\$56.00	\$56.00	\$54.00
Slabs, rerolling	56.00	56.00	56.00	54.00
Forging billets	66.00	66.00	66.00	63.00
Alloy blooms billets, slabs	70.00	70.00	70.00	66.00

### Wire Rod and Skelp:

(cents per pound)				
Wire rods	4.10	4.10	4.10	3.85
Skelp	3.35	3.35	3.35	3.15

## Composite Prices

### Finished Steel Base Price

Apr. 10, 1951	4.131¢ per lb.
One week ago	4.131¢ per lb.
One month ago	4.131¢ per lb.
One year ago	3.837¢ per lb.

	High	Low
1951....	4.131¢ Jan. 2	4.131¢ Jan. 2
1950....	4.131¢ Dec. 1	3.837¢ Jan. 3
1949....	3.837¢ Dec. 27	3.3705¢ May 3
1948....	3.721¢ July 27	3.193¢ Jan. 1
1947....	3.193¢ July 29	2.848¢ Jan. 1
1946....	2.848¢ Dec. 31	2.464¢ Jan. 1
1945....	2.464¢ May 29	2.396¢ Jan. 1
1944....	2.396¢	2.396¢
1943....	2.396¢	2.396¢
1942....	2.396¢	2.396¢
1941....	2.396¢	2.396¢
1940....	2.30467¢ Jan. 2	2.24107¢ Apr. 16
1939....	2.35367¢ Jan. 3	2.26689¢ May 16
1938....	2.58414¢ Jan. 4	2.27207¢ Oct. 18
1937....	2.58414¢ Mar. 9	2.32263¢ Jan. 4
1936....	2.32263¢ Dec. 28	2.05200¢ Mar. 10
1935....	1.89196¢ July 5	1.83910¢ Mar. 1
1929....	2.31773¢ May 28	2.26498¢ Oct. 29

Weighted index based on steel bars, shapes, plates, wire, rails, black pipe, hot and cold-rolled sheets and strips, representing major portion of finished steel shipment. Index recapitulated in Aug. 28, 1941, issue and in May 12, 1949.

Price advances over previous week are printed in Heavy Type; declines appear in *Italics*

Pig Iron:	Apr. 10, 1951	Apr. 3, 1951	Mar. 13, 1951	Apr. 11, 1950
(per gross ton)				
No. 2 foundry, del'd Phila.	\$57.77	\$57.77	\$57.77	\$50.42
No. 2, Valley furnace	52.50	52.50	52.50	46.50
No. 2, Southern Cin'ti	55.58	55.58	55.58	49.08
No. 2, Birmingham	48.88	48.88	48.88	42.38
No. 2, foundry, Chicago†	52.50	52.50	52.50	46.50
Basic del'd Philadelphia	56.92	56.92	56.92	49.92
Basic, Valley furnace	52.00	52.00	52.00	46.00
Malleable, Chicago†	52.50	52.50	52.50	46.50
Malleable, Valley	52.50	52.50	52.50	46.50
Charcoal, Chicago	70.56	70.56	70.56	68.56
Ferromanganese†	186.25	186.25	186.25	173.40

†The switching charge for delivery to foundries in the Chicago district is \$1 per ton.

‡Average of U. S. prices quoted on Ferroalloy page.

### Scrap:

(per gross ton)				
No. 1 steel, Pittsburgh	\$44.00*	\$44.00*	\$44.00*	\$32.75
No. 1 steel, Phila. area	42.50*	42.50*	42.50*	25.25
No. 1 steel, Chicago	42.50*	42.50*	42.50*	28.50
No. 1 bundles, Detroit	40.00*	40.00*	40.00*	26.75
Low phos. Young'n	46.50*	46.50*	46.50*	33.75
No. 1 cast, Pittsburgh	49.00†	49.00†	49.00†	39.50
No. 1 cast, Philadelphia	49.00†	49.00†	49.00†	37.50
No. 1 cast, Chicago	49.00†	49.00†	49.00†	41.50

\*Basing Pt. †Shipping Pt.

Not including broker's fee after Feb. 7, 1951.

### Coke: Connellsville:

(per net ton at oven)				
Furnace coke, prompt	\$14.75	\$14.75	\$14.25	\$14.25
Foundry coke, prompt	17.75	17.75	17.25	16.25

### Nonferrous Metals:

(cents per pound to large buyers)				
Copper, electro, Conn.	24.50	24.50	24.50	18.50
Copper, Lake, Conn.	24.625	24.625	24.625	18.625
Tin, Straits, New York	\$1.505†	\$1.495*	\$1.34	76.25
Zinc, East St. Louis	17.50	17.50	17.50	10.50
Lead, St. Louis	16.80	16.80	16.80	10.30
Aluminum, virgin	19.00	19.00	19.00	17.00
Nickel, electrolytic	53.55	53.55	53.55	42.97
Magnesium, ingot	24.50	24.50	24.50	20.50
Antimony, Laredo, Tex.	42.00	42.00	42.00	24.50

†Tentative. \*Revised.

Starting with the issue of May 12, 1949, the weighted finished steel composite was revised for the years 1941 to date. The weights used are based on the average product shipments for the 7 years 1937 to 1940 inclusive and 1946 to 1948 inclusive. The use of quarterly figures has been eliminated because it was too sensitive. (See p. 130 of May 12, 1949, issue.)

### Pig Iron

.....\$52.69 per gross ton....
..... 52.69 per gross ton....
..... 52.69 per gross ton....
..... 46.68 per gross ton....

### Scrap Steel

.....\$43.00 per gross ton.....
..... 43.00 per gross ton.....
..... 43.00 per gross ton.....
..... 28.83 per gross ton.....

High		Low		High		Low	
\$52.69	Jan. 2	\$52.69	Jan. 2	\$47.75	Jan. 30	\$43.00	Feb. 7
52.69	Dec. 12	45.88	Jan. 3	45.13	Dec. 19	26.25	Jan. 3
46.87	Jan. 18	45.88	Sept. 6	43.00	Jan. 4	19.33	June 28
46.91	Oct. 12	39.58	Jan. 6	43.16	July 27	39.75	Mar. 9
37.98	Dec. 30	30.14	Jan. 7	42.58	Oct. 28	29.50	May 20
30.14	Dec. 10	25.37	Jan. 1	31.17	Dec. 24	19.17	Jan. 1
25.37	Oct. 23	23.61	Jan. 2	19.17	Jan. 2	18.92	May 22
\$23.61		\$23.61		19.17	Jan. 11	15.76	Oct. 24
23.61		23.61		\$19.17		\$19.17	
23.61		23.61		19.17		19.17	
\$23.61	Mar. 20	23.45	Jan. 2	\$22.00	Jan. 7	\$19.17	Apr. 10
23.45	Dec. 23	22.61	Jan. 2	21.83	Dec. 30	16.04	Apr. 9
22.61	Sept. 19	20.61	Sept. 12	22.50	Oct. 3	14.08	May 16
23.25	June 21	19.61	July 6	15.00	Nov. 22	11.00	June 7
32.25	Mar. 9	20.25	Feb. 16	21.92	Mar. 30	12.67	June 9
19.74	Nov. 24	18.73	Aug. 11	17.75	Dec. 21	12.67	June 8
14.81	Jan. 5	13.56	Dec. 6	8.50	Jan. 12	6.43	July 5
18.71	May 14	18.21	Dec. 17	17.58	Jan. 29	14.08	Dec. 8
Based on averages for basic iron at Valley furnaces and foundry iron at Chicago, Philadelphia, Buffalo, Valley and Birmingham.				Average of No. 1 heavy melting steel scrap delivered to consumers at Pittsburgh, Philadelphia and Chicago.			





Cast Iron

Electric Furnace  
Grades

Open Hearth

Foundry Steel

Sheet Iron for  
Baling

Stainless Steel

Non-Ferrous Metals

# SCRAP

## IRON AND STEEL

Since 1898—for over fifty years—the Alter Company has served the scrap consumer as well as the scrap producing industries and the scrap dealers.

During this half century, wars, peace, prosperity, inflation and depression have left their imprint of experience upon the policies and practices of the Alter Company.

If you have a scrap problem, we invite you to let us counsel with you. We promise you that your time will not be wasted.

Over 50 Years  
**ALTER**  
C O M P A N Y

1700 ROCKINGHAM ROAD - DAVENPORT 2, IOWA

## IRON AGE

**STEEL  
PRICES**

Smaller numbers in price boxes indicate producing companies. For main office locations, see key on facing page.  
Base prices at producing points apply only to sizes and grades produced in these areas. Prices are in cents per lb unless otherwise noted. Extras apply.

	Pittsburgh	Chicago	Gary	Cleveland	Canton Massillon	Middle- town	Youngs- town	Bethle- hem	Buffalo	Consho- hocken	Johns- town	Spar- rows Point	Granite City	Detroit
<b>INGOTS</b> Carbon forging, net ton	\$52.00 <sup>1</sup>													
Alloy, net ton	\$54.00 <sup>1-17</sup>													\$54.00 <sup>1</sup>
<b>BILLETS, BLOOMS, SLABS</b> Carbon, rerolling, net ton	\$56.00 <sup>1-5</sup>	\$56.00 <sup>1</sup>	\$56.00 <sup>1</sup>						\$56.00 <sup>1</sup>		\$56.00 <sup>3</sup>			
Carbon forging billets, net ton	\$66.00 <sup>1-5</sup>	\$66.00 <sup>1-4</sup>	\$66.00 <sup>1</sup>	\$66.00 <sup>4</sup>	\$66.00 <sup>4</sup>				\$66.00 <sup>3-4</sup>	\$73.00 <sup>3-8</sup>	\$66.00 <sup>3</sup>			\$68.00 <sup>1</sup>
Alloy, net ton	\$70.00 <sup>1-17-6</sup>	\$70.00 <sup>1-4</sup>	\$70.00 <sup>1-6</sup>		\$70.00 <sup>4</sup>			\$70.00 <sup>3</sup>	\$70.00 <sup>3-4</sup>	\$77.00 <sup>3-8</sup>	\$70.00 <sup>3</sup>			\$73.00 <sup>1</sup>
<b>PIPE SKELP</b>	3.35 <sup>1</sup> 3.45 <sup>5</sup>						3.35 <sup>1-4</sup>							
<b>WIRE RODS</b>	4.10 <sup>2</sup> 4.30 <sup>1-8</sup>	4.10 <sup>2-4-3-3</sup>	4.10 <sup>6</sup>	4.10 <sup>2</sup>			4.10 <sup>6</sup>		4.10 <sup>5-5</sup>		4.10 <sup>3</sup>	4.20 <sup>3</sup>		
<b>SHEETS</b> Hot-rolled (18 ga. & hvr.)	3.60 <sup>1-5-9-15</sup> 3.75 <sup>2-8</sup>	3.60 <sup>2-22</sup>	3.60 <sup>1-6-8</sup>	3.60 <sup>4-5</sup>		3.60 <sup>7</sup>	3.60 <sup>1-4-6</sup> 4.00 <sup>1-3</sup>		3.60 <sup>3</sup>	4.00 <sup>2-6</sup>		3.60 <sup>3</sup>	4.30 <sup>2-3</sup>	3.80 <sup>1-3</sup> 4.40 <sup>4-7</sup>
Cold-rolled	4.35 <sup>1-5-9-15-7</sup>		4.35 <sup>1-6-8</sup>	4.35 <sup>4-5</sup>		4.35 <sup>7</sup>	4.35 <sup>4-8</sup>		4.35 <sup>3</sup>			4.35 <sup>3</sup>	5.05 <sup>2-3</sup>	4.55 <sup>1-3</sup>
Galvanized (10 gage)	4.80 <sup>1-9-15</sup>		4.80 <sup>1-8</sup>		4.80 <sup>4</sup>	4.80 <sup>7</sup>	5.50 <sup>4-4</sup> 6.00 <sup>4-4</sup>					4.80 <sup>3</sup>	5.50 <sup>2-2</sup>	
Enameling (12 gage)	4.65 <sup>1</sup>		4.65 <sup>1-8</sup>	4.65 <sup>4</sup>		4.65 <sup>7</sup>	4.65 <sup>6</sup>						5.35 <sup>2-2</sup>	
Long term (10 gage)	5.20 <sup>9-15</sup>		5.20 <sup>1</sup>			5.20 <sup>7</sup>	6.00 <sup>4-4</sup>							
Hi str. low alloy, h.r.	5.40 <sup>1-5</sup> 5.75 <sup>9</sup>	5.40 <sup>1</sup>	5.40 <sup>1-8</sup> 5.90 <sup>8</sup>	5.40 <sup>4-5</sup>			5.40 <sup>1-4-13</sup> 5.90 <sup>6</sup>		5.40 <sup>3</sup>	5.65 <sup>2-6</sup>		5.40 <sup>3</sup>		5.95 <sup>1-2</sup>
Hi str. low alloy, c.r.	6.55 <sup>1-5</sup> 6.90 <sup>9</sup>		6.55 <sup>1-8</sup> 7.05 <sup>8</sup>	6.55 <sup>4-5</sup>			6.55 <sup>4</sup> 7.05 <sup>6</sup>		6.55 <sup>3</sup>			6.55 <sup>3</sup>		7.10 <sup>1-2</sup>
Hi str. low alloy, galv.	7.20 <sup>1</sup>											6.75 <sup>3</sup>		
<b>STRIP</b> Hot-rolled	3.60 <sup>9</sup> , 4.00 <sup>4-11</sup> 3.75 <sup>2-8</sup> 3.50 <sup>5-7</sup>	3.50 <sup>6-6</sup>	3.50 <sup>1-6-8</sup>			3.50 <sup>7</sup>	3.50 <sup>1-4-6</sup> 4.00 <sup>1-3</sup>		3.50 <sup>3-4</sup>	3.90 <sup>2-6</sup>	3.50 <sup>3</sup>	3.50 <sup>3</sup>		4.40 <sup>1-7</sup> 3.80 <sup>1-2</sup>
Cold-rolled	4.65 <sup>5-7-9</sup> 5.00 <sup>2-8</sup> 5.35 <sup>4-6-3-5-8</sup>	4.90 <sup>4-6-6</sup>	4.90 <sup>8</sup>	4.65 <sup>2-5</sup>		4.65 <sup>7</sup>	4.65 <sup>4-6</sup> 5.25 <sup>4-8-4-9</sup> 5.35 <sup>1-3-4-0</sup>		4.65 <sup>3</sup>			4.65 <sup>3</sup>		4.85 <sup>1-2</sup> 5.45 <sup>4-7</sup> 5.60 <sup>4-4-4-1</sup>
Hi str. low alloy, h.r.	5.75 <sup>9</sup>		5.50 <sup>1</sup> 5.30 <sup>4-5-8-9</sup>				4.95 <sup>1-5-50<sup>1</sup></sup> 5.40 <sup>1-3</sup> , 5.80 <sup>6</sup> (6.20 <sup>4</sup> , 6.55 <sup>1-3</sup> ) 7.05 <sup>6</sup>		4.95 <sup>3</sup>	5.55 <sup>2-6</sup>		4.95 <sup>3</sup>		5.95 <sup>1-2</sup>
Hi str. low alloy, c.r.	7.20 <sup>9</sup>			6.55 <sup>2</sup> 6.70 <sup>5</sup>					6.40 <sup>3</sup>			6.40 <sup>3</sup>		
<b>TINPLATE</b> Cokes, 1.25-lb base box (1.50 lb. add 25¢)	\$8.45 <sup>1-5-9-15</sup>		\$8.45 <sup>1-6-8</sup>				\$8.45 <sup>4</sup>					\$8.55 <sup>3</sup>		
Electrolytic 0.25, 0.50, 0.75 lb box	0.25 lb base box, \$7.15 <sup>1-4-5-8-9</sup> ; \$7.25 <sup>3-11</sup> ; \$7.35 <sup>2-2</sup> 0.50 lb, add 25¢; 0.75 lb add 65¢													
<b>BLACKPLATE, 20 gage</b> Hollowware enameling	5.85 <sup>1</sup> 6.15 <sup>5</sup>		5.85 <sup>1</sup>				5.30 <sup>4</sup>							
<b>BARS</b> Carbon steel	3.70 <sup>1-6</sup> 3.85 <sup>9</sup>	3.70 <sup>1-4-3-3</sup>	3.70 <sup>1-4-6-8</sup>	3.70 <sup>4</sup>	3.70 <sup>4</sup>		3.70 <sup>1-4-6</sup>		3.70 <sup>3-4</sup>		3.70 <sup>3</sup>			3.85 <sup>1-1</sup>
Reinforcing	3.70 <sup>1-5</sup>	3.70 <sup>4</sup>	3.70 <sup>1-6-8</sup>	3.70 <sup>4</sup>			3.70 <sup>1-5-6</sup>		3.70 <sup>3-4</sup>		3.70 <sup>3</sup>	3.70 <sup>3</sup>		
Cold-finished	4.55 <sup>2-4-5</sup> 5.2-6.9-7.1	4.55 <sup>2-23-70</sup>	4.55 <sup>4-7-4-7-3</sup>	4.55 <sup>2</sup>	4.55 <sup>4-8-2</sup>		4.55 <sup>5-57</sup>		4.60 <sup>7-0</sup>					4.70 <sup>4-4</sup>
Alloy, hot-rolled	4.30 <sup>1-17</sup>	4.30 <sup>1-4-3-3</sup>	4.30 <sup>1-6-8</sup>		4.30 <sup>4</sup>		4.30 <sup>1-6</sup>	4.30 <sup>8</sup>	4.30 <sup>3-4</sup>		4.30 <sup>3</sup>			4.45 <sup>3-1</sup> 4.65 <sup>1-2</sup>
Alloy, cold-drawn	5.40 <sup>17-52</sup> 6.9-7.1-2	5.40 <sup>4-23-59</sup> 7.0-7.3 5.45 <sup>2</sup>	5.40 <sup>4-7-3</sup> 7.4		5.40 <sup>4-3-2</sup>		5.40 <sup>6-25-57</sup>	5.40 <sup>3</sup>	5.40 <sup>3</sup>					5.55 <sup>4-4</sup>
Hi str. low alloy, h.r.	5.55 <sup>1-5</sup>		5.55 <sup>1-8</sup> 6.05 <sup>8</sup>	5.55 <sup>4-5</sup>			5.55 <sup>1</sup> 6.05 <sup>6</sup>	5.55 <sup>3</sup>	5.55 <sup>3</sup>		5.55 <sup>3</sup>			
<b>PLATE</b> Carbon steel	3.70 <sup>1-5-15</sup> 4.00 <sup>9</sup>	3.70 <sup>1-2-3</sup>	3.70 <sup>1-6-8</sup>	3.70 <sup>4-5</sup>			3.70 <sup>1-4-6</sup> 3.95 <sup>1-3</sup>		3.70 <sup>3</sup>	4.15 <sup>2-6</sup>	3.70 <sup>3</sup>	3.70 <sup>3</sup>	4.40 <sup>2-2</sup>	
Floor plates	4.75 <sup>1</sup>	4.75 <sup>1</sup>	4.75 <sup>8</sup>	4.75 <sup>5</sup>						4.75 <sup>2-6</sup>				
Alloy	4.75 <sup>1</sup>	4.75 <sup>1</sup>	4.75 <sup>1</sup>				5.20 <sup>1-3</sup>			5.05 <sup>2-6</sup>	4.75 <sup>3</sup>	4.75 <sup>3</sup>		
Hi str. low alloy	5.65 <sup>1-6</sup>	5.65 <sup>1</sup>	5.65 <sup>1-8</sup> 6.15 <sup>8</sup>	5.65 <sup>4-5</sup>			5.65 <sup>4</sup> 5.70 <sup>1-3</sup> 6.15 <sup>6</sup>			5.90 <sup>2-6</sup>	5.65 <sup>3</sup>	5.65 <sup>3</sup>		
<b>SHAPES, Structural</b>	3.65 <sup>1-5</sup> 3.90 <sup>9</sup>	3.65 <sup>1-2-3</sup>	3.65 <sup>1-8</sup>					3.70 <sup>3</sup>	3.70 <sup>3</sup>		3.70 <sup>3</sup>			
Hi str. low alloy	5.50 <sup>1-5</sup>	5.50 <sup>1</sup>	5.50 <sup>1-8</sup> 6.00 <sup>8</sup>				6.00 <sup>6</sup>	5.50 <sup>3</sup>	5.50 <sup>3</sup>		5.50 <sup>3</sup>			
<b>MANUFACTURERS' WIRE</b> Bright	4.85 <sup>2-5</sup> 5.10 <sup>1-8</sup>	4.85 <sup>2</sup> 4.3-3.4		4.85 <sup>2</sup>			4.85 <sup>5</sup>	Kokomo = 4.95 <sup>2-0</sup> 4.85 <sup>3-5</sup>			4.85 <sup>3</sup>	4.95 <sup>3</sup>	Duluth = 4.85 <sup>3</sup>	
<b>PILING, Steel Sheet</b>	4.45 <sup>1</sup>	4.45 <sup>1</sup>	4.45 <sup>8</sup>						4.45 <sup>3</sup>					

Smaller numbers indicate producing companies. See key at right.  
Prices are in cents per lb unless otherwise noted. Extras apply.

IRON AGE

# STEEL PRICES

## Key to Steel Producers

- 1 U. S. Steel Co., Pittsburgh
- 2 American Steel & Wire Co., Cleveland
- 3 Bethlehem Steel Co., Bethlehem
- 4 Republic Steel Corp., Cleveland
- 5 Jones & Laughlin Steel Corp., Pittsburgh
- 6 Youngstown Sheet & Tube Co., Youngstown
- 7 Armco Steel Corp., Middletown, Ohio
- 8 Inland Steel Co., Chicago
- 9 Weirton Steel Co., Weirton, W. Va.
- 10 National Tube Co., Pittsburgh
- 11 Tennessee Coal, Iron & R. R. Co., Birmingham
- 12 Great Lakes Steel Corp., Detroit
- 13 Sharon Steel Corp., Sharon, Pa.
- 14 Colorado Fuel & Iron Corp., Denver
- 15 Wheeling Steel Corp., Wheeling, W. Va.
- 16 Geneva Steel Co., Salt Lake City
- 17 Crucible Steel Co. of America, New York
- 18 Pittsburgh Steel Co., Pittsburgh
- 19 Kaiser Steel Corp., Oakland, Calif.
- 20 Portsmouth Div., Detroit Steel Corp., Detroit
- 21 Lukens Steel Co., Coatesville, Pa.
- 22 Granite City Steel Co., Granite City, Ill.
- 23 Wisconsin Steel Co., South Chicago, Ill.
- 24 Columbia Steel Co., San Francisco
- 25 Copperweld Steel Co., Glassport, Pa.
- 26 Alan Wood Steel Co., Conshohocken, Pa.
- 27 Calif. Cold Rolled Steel Corp., Los Angeles
- 28 Allegheny Ludlum Steel Corp., Pittsburgh
- 29 Claymont Steel Corp., Claymont, Del.
- 30 Continental Steel Corp., Kokomo, Ind.
- 31 Rotary Electric Steel Co., Detroit
- 32 Laclede Steel Co., St. Louis
- 33 Northwestern Steel & Wire Co., Sterling, Ill.
- 34 Keystone Steel & Wire Co., Peoria, Ill.
- 35 Central Iron & Steel Co., Harrisburg, Pa.
- 36 Carpenter Steel Co., Reading, Pa.
- 37 Eastern Stainless Steel Corp., Baltimore
- 38 Washington Steel Corp., Washington, Pa.
- 39 Jessop Steel Co., Washington, Pa.
- 40 Blair Strip Steel Co., New Castle, Pa.
- 41 Superior Steel Corp., Carnegie, Pa.
- 42 Timken Steel & Tube Div., Canton, Ohio
- 43 Babcock & Wilcox Tube Co., Beaver Falls, Pa.
- 44 Reeves Steel & Mfg. Co., Dover, Ohio
- 45 John A. Roebling's Sons Co., Trenton, N. J.
- 46 Simonds Saw & Steel Co., Fitchburg, Mass.
- 47 McLaughlin Steel Corp., Detroit
- 48 Cold Metal Products Co., Youngstown
- 49 Thomas Steel Co., Warren, Ohio
- 50 Wilson Steel & Wire Co., Chicago
- 51 Sweet's Steel Co., Williamsport, Pa.
- 52 Superior Drawn Steel Co., Monaca, Pa.
- 53 Trumont Nail Co., Wareham, Mass.
- 54 Fifth Sterling St. & Carbide Corp., McKeesport
- 55 Ingersoll Steel Div., Chicago
- 56 Phoenix Iron & Steel Co., Phoenixville, Pa.
- 57 Fitzsimons Steel Co., Youngstown
- 58 Stanley Works, New Britain, Conn.
- 59 Universal-Cyclops Steel Corp., Bridgeville, Pa.
- 60 American Cladmetals Co., Carnegie, Pa.
- 61 Cuyahoga Steel & Wire Co., Cleveland
- 62 Bethlehem Pacific Coast Steel Corp., San Fran.
- 63 Follansbee Steel Corp., Pittsburgh
- 64 Niles Rolling Mill Co., Niles, Ohio
- 65 Atlantic Steel Co., Atlanta
- 66 Acme Steel Co., Chicago
- 67 Jaslyn Mfg. & Supply Co., Chicago
- 68 Detroit Steel Corp., Detroit
- 69 Wycoff Steel Co., Pittsburgh
- 70 Bliss & Laughlin, Inc., Harvey, Ill.
- 71 Columbia Steel & Shaffing Co., Pittsburgh
- 72 Cumberland Steel Co., Cumberland, Md.
- 73 La Salle Steel Co., Chicago
- 74 Monarch Steel Co., Inc., Hammond, Ind.
- 75 Empire Steel Co., Mansfield, Ohio
- 76 Mahoning Valley Steel Co., Niles, Ohio
- 77 Oliver Iron & Steel Co., Pittsburgh
- 78 Pittsburgh Screw & Bolt Co., Pittsburgh
- 79 Standard Forging Corp., Chicago
- 80 Driver Harris Co., Harrison, N. J.
- 81 Detroit Tube & Steel Div., Detroit
- 82 Reliance Div., Eaton Mfg. Co., Massillon, Ohio
- 83 Sheffield Steel Corp., Kansas City
- 84 Plymouth Steel Co., Detroit
- 85 Wickliffe, Spencer Steel, Buffalo
- 86 Angell Nail and Chaplet, Cleveland
- 87 Mid-States Steel & Wire, Crawfordsville, Ind.
- 88 National Supply, Pittsburgh, Pa.
- 89 Wheatland Tube Co., Wheatland, Pa.
- 90 Mercer Tube & Mfg. Co., Sharon, Pa.
- 91 Woodward Iron Co., Woodward, Ala.
- 92 Sloss-Sheffield Steel & Iron Co., Birmingham
- 93 Hanna Furnace Corp., Detroit
- 94 Interlake Iron Corp., Cleveland
- 95 Lone Star Steel Co., Dallas
- 96 Mystic Iron Works, Everett, Mass.
- 97 Jackson Iron & Steel Co., Jackson, O.
- 98 Globe Iron Co., Jackson, O.
- 99 Pittsburgh Coke & Chemical Co., Pittsburgh
- 100 Shenango Furnace Co., Pittsburgh
- 101 Tennessee Products & Chem. Corp., Nashville
- 102 Koppers Co., Inc., Granite City, Ill.
- 103 Page Steel & Wire Div., American Chain & Cable, Monessen, Pa.
- 104 Wallingford Steel Co., Wallingford, Conn.

Kansas City	Houston	Birmingham	WEST COAST Seattle, San Francisco, Los Angeles, Fontana	
			F = \$79.00 <sup>19</sup>	INGOTS Carbon forging, net ton
	\$62.00 <sup>23</sup>		F = \$80.00 <sup>19</sup>	Alloy, net ton
		\$56.00 <sup>11</sup>	F = \$75.00 <sup>19</sup>	BILLETS, BLOOMS, SLABS Carbon, rerolling, net ton
	\$74.00 <sup>23</sup>	\$66.00 <sup>11</sup>	F = \$85.00 <sup>19</sup> SF, LS, S = \$85.00 <sup>22</sup>	Carbon forging billets, net ton
	\$78.00 <sup>23</sup>		F = \$89.00 <sup>19</sup> LA = \$90.00 <sup>22</sup>	Alloy net ton
				PIPE SKELP
	4.50 <sup>23</sup>	4.10 <sup>4,11</sup>	SF = 4.90 <sup>2</sup> , F = 4.90 <sup>19</sup> LA = 4.90 <sup>24,62</sup>	WIRE RODS
		3.60 <sup>4,11</sup>	SF, LA = 4.30 <sup>24</sup> F = 4.55 <sup>19</sup>	SHEETS Hot-rolled (18 ga. & hvr.)
		4.35 <sup>11</sup>	SF = 5.30 <sup>24</sup> F = 5.30 <sup>19</sup>	Cold-rolled
		4.80 <sup>4,11</sup>	SF, LA = 5.55 <sup>24</sup>	Galvanized (10 gage)
			Ashland = 4.80 <sup>7</sup> Kokomo = 5.20 <sup>30</sup>	Enameling (12 gage)
			Ashland = 4.65 <sup>7</sup>	Long ternes (10 gage)
		5.40 <sup>11</sup>	F = 6.35 <sup>19</sup>	Hi str. low alloy, h.r.
			F = 7.50 <sup>19</sup>	Hi str. low alloy, c.r.
				Hi str. low alloy, galv.
4.10 <sup>23</sup>	4.90 <sup>23</sup>	3.50 <sup>4,11</sup>	SF, LA = 4.25 <sup>24,62</sup> F = 4.75 <sup>19</sup> , S = 4.50 <sup>22</sup>	STRIP Hot-rolled
			F = 6.30 <sup>19</sup> LA = 6.40 <sup>27</sup>	Cold-rolled
		5.30 <sup>11</sup>	F = 6.20 <sup>19</sup> SF, LA = 6.05 <sup>22</sup> S = 6.30 <sup>22</sup>	Hi str. low alloy, h.r.
			F = 6.95 <sup>19</sup>	Hi str. low alloy, c.r.
		\$8.55 <sup>11</sup>	SF = 9.20 <sup>24</sup>	TINPLATE Coke, 1.25-lb base box (1.50 lb, add 25¢)
				Electrolytic 0.25, 0.50, 0.75 lb box
				BLACKPLATE, 29 gage Hollowware enameling
4.30 <sup>23</sup>	4.10 <sup>23</sup>	3.70 <sup>4,11</sup>	SF, LA = 4.40 <sup>24</sup>	BARS Carbon steel
4.30 <sup>23</sup>	4.10 <sup>23</sup>	3.70 <sup>4,11</sup>	SF, S = 4.45 <sup>22</sup> F = 4.40 <sup>19</sup> , LA = 4.40 <sup>22</sup>	Reinforcing
			LA = 6.00 <sup>4</sup>	Cold-finished
4.30 <sup>23</sup>	4.70 <sup>23</sup>		LA = 5.35 <sup>22</sup> F = 5.35 <sup>19</sup>	Alloy, hot-rolled
				Alloy, cold-drawn
		5.55 <sup>11</sup>	F = 6.60 <sup>19</sup> SF, S = 6.30 <sup>22</sup> LA = 6.25 <sup>22</sup>	Hi str. low alloy, h.r.
	4.10 <sup>23</sup>	3.70 <sup>4,11</sup>	F = 4.30 <sup>19</sup> S = 4.60 <sup>22</sup>	PLATE Carbon steel
				Floor plates
			F = 5.70 <sup>19</sup>	Alloy
		5.65 <sup>11</sup>	F = 6.25 <sup>19</sup> S = 6.55 <sup>22</sup>	Hi str. low alloy
4.25 <sup>23</sup>	4.06 <sup>23</sup>	3.60 <sup>4</sup> 3.65 <sup>11</sup>	SF = 4.20 <sup>22</sup> F = 4.25 <sup>19</sup> LA = 4.25 <sup>24,62</sup> S = 4.30 <sup>22</sup>	SHAPES, Structural
		5.50 <sup>11</sup>	SF = 6.10 <sup>22,19</sup> SF = 6.00 <sup>22</sup> LA = 6.05 <sup>22</sup>	Si str. low alloy
5.45 <sup>23</sup>	5.22 <sup>23</sup>	4.85 <sup>4,11</sup>	SF, LA = 5.80 <sup>24</sup>	MANUFACTURERS' WIRE Bright



## STAINLESS STEELS

Base price, cents per lb. f.o.b. mill.

Product	301	302	303	304	316	321	347	410	416	430
Ingot, rerolling.....	14.25	15.00	16.50	16.00	24.25	19.75	21.50	12.75	14.75	13.00
Slabs, billets rerolling.....	18.50	19.75	21.75	20.75	31.75	26.00	28.25	16.50	20.00	16.75
Forg. discs, die blocks, rings.	34.00	34.00	36.50	35.50	52.50	40.00	44.50	28.00	28.50	28.50
Billets, forging.....	26.25	26.25	28.75	27.50	41.00	31.00	34.75	21.50	22.00	22.00
Bars, wires, structurals.....	31.25	31.25	33.75	32.75	48.75	36.75	41.25	25.75	26.25	26.25
Plates.....	33.00	33.00	35.00	35.00	51.50	40.50	45.00	27.00	27.50	27.50
Sheets.....	41.00	41.00	43.00	43.00	56.50	49.00	53.50	36.50	37.00	39.00
Strip, hot-rolled.....	26.50	26.00	32.25	30.00	48.25	36.75	41.00	23.50	30.25	24.00
Strip, cold-rolled.....	34.00	36.50	40.00	38.50	58.50	48.00	52.00	30.50	37.00	31.00

STAINLESS STEEL PRODUCING POINTS—*Sheets*: Midland, Pa., 17; Brackenridge, Pa., 28; Butler, Pa., 7; McKeesport, Pa., 1; Washington, Pa., 38 (type 316 add 5¢), 39; Baltimore, 37; Middletown, Ohio, 7; Massillon, Ohio, 4; Gary, 1; Bridgeville, Pa., 59; New Castle, Ind., 65; Ft. Wayne, Ind., 67; Lockport, N. Y., 45.

Pa., 89; New Castle, Ind., 65; Ft. Wayne, Ind., 61; Lockport, N. Y., 45.  
Strip: Midland, Pa., 17; Cleveland, 2; Carnegie, Pa., 41; McKeesport, Pa., 54;  
Reading, Pa., 36; Washington, Pa., 38 (type 316 add 5f); W. Leechburg, Pa., 28; Bridge-  
ville, Pa., 59; Detroit, 47; Massillon, Canton, Ohio, 4; Middletown, Ohio, 7; Harrison,  
N. J., 80; Youngstown, 48; Lockport, N. Y., 46; New Britain, Conn., 53; Sharon, Pa., 13;  
Butler, Pa., 7; Wallingford, Conn., 104.

*Bars:* Baltimore, 7; Duquesne, Pa., 1; Munhall, Pa., 1; Reading, Pa., 36; Titusville, Pa., 59; Washington, Pa., 39; McKeesport, Pa., 1, 54; Bridgeville, Pa., 59; Dunkirk, N. Y., 28; Massillon, Ohio, 4; Chicago, 1; Syracuse, N. Y., 17; Watervliet, N. Y., 28; Waukegan, Ill., 2; Lockport, N. Y., 46; Canton, Ohio, 42; Ft. Wayne, Ind., 67.

Wire: Waukegan, Ill., 2; Massillon, Ohio, 4; McKeesport, Pa., 54; Bridgeport, Conn., 44; Ft. Wayne, Ind., 67; Trenton, N. J., 45; Harrison, N. J., 80; Baltimore, 7; Dunkirk, 28; Monessen, 103; Syracuse, N. Y., 17; Bridgeville, Pa., 59.

**Structurals:** Baltimore, 7; Massillon, Ohio, 4; Chicago, 1, 67; Watervliet, N. Y., 28; Bridgeport, Conn., 44; Syracuse, N. Y., 17.

*Plates:* Brackenridge, Pa., 28 (type 416 add  $\frac{1}{2}\epsilon$ ); Butler, Pa., 7; Chicago, 1; Munhall, Pa., 1; Midland, Pa., 17; New Castle, Ind., 55; Lockport, N. Y., 46; Middletown, 7; Washington, Pa., 39; Cleveland, Massillon, 4.

*Forged discs, die blocks, rings:* Pittsburgh, 1, 17; Syracuse, 17; Ferndale, Mich., 23; Washington, Pa., 39.

54; Massillon, Canton, Ohio, 4; Watervliet, 28; Pittsburgh, Chicago, 1; Syracuse, N. Y., 17.

## MERCHANT WIRE PRODUCTS

F.o.b. Mill	Standard & Coated Nails Base Col.	Woven Wire Fence 9-15½ ga. Base Col.	Fence Posts Base Col.	Single Loop Bale Tie Base Col.	Twisted Barbed Wire Base Col.	Gal. Barbed Wire Base Col.	Merch. Wire Ann'id #/lb.	Merch. Wire Gal. (#) #/lb.
Alabama City-4	118	126		123		136	5.70	5.95
Alliquipa, Pa.-5	118	132			136	140	5.70	6.15
Atlanta-85	121	133		126	129	143	5.95	6.40
Bartonville-34	118	130		123	143	143	5.70	6.15
Buffalo-85							4.85	
Cleveland-86	125						5.70	6.15
Cleveland-2		132					5.95	6.40
Crawfordsville-87	118	130		123	140	140	5.70	6.15
Donora, Pa.-2	118	130		123	140	140	5.70	6.15
Duizuth-2	118	130		123	140	140	5.70	6.15
Fairfield, Ala.-11	118	130		123		140	5.70	6.15
Houston-83	126	136			140	148	6.10	6.55
Johannstown, Pa.-3	118	130					5.70	6.15
Joliet, Ill.-2	118	130		123		140	5.70	6.15
Kokomo, Ind.-30	120	132		125	138	142	5.80	6.15
Los Angeles-82							6.65	
Kansas City-83	130		135			152	6.30	6.75
Minneapolis-14	123	136	130	126	148	145	5.95	6.45
Mesa-18	124	135				146	5.95	6.40
Moline, Ill.-4			136					
Pittsburg, Cal.-24	137			147	156	160	6.65	6.80
Portsmouth-20	124	137			147	147	6.10	6.60
Rankin, Pa.-2	118	130			140	140	5.70	6.15
So. Chicago, Ill.-4	118	126	140	123		136	5.70	5.95
S. San Fran.-14				127		160	6.65	7.00
Sparrows Pt.-3	120			125	142	142	6.80	6.25
Sterling, Ill.-33	118	130		123	140	140	5.70	6.15
Struthers, Ohio-6							5.70	6.15
Torrance, Cal.-24	136						6.65	
Worcester-2	124						6.00	6.45
Williamport, Pa.-61			150					

Cut Nells, carloads, base, \$7.35 per 100 lb. (less 20¢ to jobbers), at Conshohocken, Pa., (26). Wheeling, W. Va., (15).. \$7.15.

(1) Alabama City and So. Chicago do not include zinc extra.

## CAST IRON WATER PIPE

	Per Net Ton
6 to 24-in., del'd Chicago.	\$105.30 to \$108.50
6 to 24-in., del'd N. Y....	108.50 to 109.50
6 to 24-in., Birmingham.	91.50 to 96.00
6-in. and larger, f.o.b. cars, San Francisco, Los Angeles, for all rail shipment; rail and water shipment less .....	\$108.50 to \$113.00
Class "A" and gas pipe, \$5 extra; 4-in. pipe is \$5 a ton above 6-in.	

## PIPE AND TUBING

Base discounts, f.o.b. milla. Base price about \$200 per net ton.

	BUTTWELD												SEAMLESS							
	1/2 In.		3/4 In.		1 In.		1 1/4 In.		1 1/2 In.		2 In.		2 1/2-3 In.		2 In.		2 1/2-3 In.		3 1/2-4 In.	
	Blik.	Gal.	Blik.	Gal.	Blik.	Gal.	Blik.	Gal.	Blik.	Gal.	Blik.	Gal.	Blik.	Gal.	Blik.	Gal.	Blik.	Gal.	Blik.	Gal.
<b>STANDARD</b>																				
<b>T. &amp; C.</b>																				
Sparrows Pt.-3	34.0	12.0	37.0	16.0	39.5	19.5	40.0	20.0	40.5	21.0	41.0	21.5	41.5	22.0						
Cleveland-4	36.0	14.0	39.0	18.0	41.5	21.5	42.9	22.0	42.5	23.0	43.0	23.5	43.5	24.0						
Oakland-19	25.0	3.0	28.0	7.0	30.5	10.5	31.0	11.0	31.5	12.0	32.0	12.5	32.5	13.0						
Pittsburgh-5	36.0	14.0	39.0	17.0	41.5	19.5	42.0	20.5	42.5	21.0	43.0	21.5	43.5	22.5	29.5	8.0	32.5	11.5	34.5	12.5
Pittsburgh-10	36.0	14.0	39.0	18.0	41.5	21.5	42.0	22.0	42.5	23.0	43.0	23.5	43.5	24.0	29.5	9.5	32.5	12.5	34.5	14.5
St. Louis-32	35.0	13.0	38.0	17.0	40.5	20.5	41.0	21.0	41.5	22.0	42.0	22.5	42.5	23.0						
Sharon-90	36.0	13.0	39.0	17.0	41.5	20.0	42.0	20.5	42.5	21.0	43.0	21.5	43.5	23.0						
Pittsburgh-88	36.0	14.0	39.0	18.0	41.5	21.5	42.0	22.0	42.5	23.0	43.0	23.5	43.5	24.0	29.5		32.5		34.5	
Wheeling-15	36.0	14.0	39.0	18.0	41.5	21.5	42.0	22.0	42.5	23.0	43.0	23.5	43.5	24.0						
Wheatland-89	36.0	14.0	39.0	17.0	41.5	19.5	42.0	20.5	42.5	21.0	43.0	21.5	43.5	22.5						
Youngstown-6	36.0	14.0	39.0	18.0	41.5	21.5	42.0	22.0	42.5	23.0	43.0	23.5	43.5	24.0	29.5	9.5	32.5	12.5	34.5	14.5
<b>EXTRA STRONG,</b>																				
<b>PLAIN ENDS</b>																				
Sparrows Pt.-3	33.5	13.0	37.5	17.0	39.5	20.5	40.0	21.0	40.5	22.0	41.0	22.5	41.5	23.0						
Cleveland-4	35.5	15.0	39.5	19.0	41.5	22.5	42.0	23.0	42.5	24.0	43.0	24.5	43.5	25.0						
Oakland-19	24.5	8.0	28.5	8.0	30.5	11.5	31.0	12.0	31.5	13.0	32.0	13.5	32.5	14.0						
Pittsburgh-5	35.5	13.5	39.5	17.5	41.5	19.5	42.0	20.5	42.5	21.0	43.0	21.5	43.5	22.5	29.0	7.5	33.0	12.0	36.5	13.5
Pittsburgh-10	35.5	15.0	39.5	19.0	41.5	22.5	42.0	23.0	42.5	24.0	43.0	24.5	43.5	25.0	29.0	10.0	33.0	14.0	36.5	17.0
St. Louis-32	34.5	14.0	38.5	18.0	40.5	21.5	41.0	22.0	41.5	23.0	42.0	23.5	42.5	23.0						
Sharon-90	35.5	14.0	39.5	18.0	41.5	21.0	42.0	21.5	42.5	22.0	43.0	22.5	43.5	23.0						
Pittsburgh-88	35.5	15.0	39.5	19.0	41.5	22.5	42.0	23.0	42.5	24.0	43.0	24.5	43.5	25.0	29.0		33.0		36.5	
Wheeling-15	35.5	15.0	39.5	19.0	41.5	22.5	42.0	23.0	42.5	24.0	43.0	24.5	43.5	25.0						
Wheatland-89	35.5	13.5	39.5	17.5	41.5	19.5	42.0	20.5	42.5	21.0	43.0	21.5	43.5	22.5						
Youngstown-6	35.5	15.0	39.5	19.0	41.5	22.5	42.0	23.0	42.5	24.0	43.0	24.5	43.5	25.0	29.0	10.0	33.0	14.0	36.5	17.0

Galvanized discounts based on zinc at 17¢ per lb. East St. Louis. For each 1¢ change in zinc, discounts vary as follows: 1/2 in., 3/4 in., and 1 in., 1 pt.; 1 1/4 in., 1 1/2 in., 2 in., 3/4 pt.; 2 1/4 in., 3 in., 3 1/2 pt. Calculate discounts on even cents per lb. of zinc. I.e., if zinc is 16.51¢ to 17.50¢ per lb., use 17¢. Jones & Laughlin discounts apply only when zinc price changes 1¢.

Threads only, buttweild and seamless, 1 pt. higher discount. Plain ends, buttweild and seamless, 3 in. and under, 3/4 pt. higher discount. Buttweild lobbars' discount, 5 pt.

## RAILS, TRACK SUPPLIES

F.o.b. Mill Cents Per Lb	No. 1 Std. Rails	Light Rails	Joint Bars	Track Spikes	Axles	Screw Spikes	Tie Plates	Track Bolts
Bessemer-1 .....	3.80	4.00	4.70					
Chicago-4 .....				6.15				
Erie-11 .....	3.80	4.00						
Fairfield-11 .....			4.40			6.80	4.50	
Gary-1 .....	3.80	4.00					4.50	
Ind. Harbor-8 .....	3.60		4.70	6.15	5.60	6.80	4.90	
Johnstown-3 .....		4.00			5.60	6.80		
Lafayette-1 .....		4.00	4.70					
Kanawha City-63 .....				6.40				
Lackawanna-3 .....	3.80	4.00	4.70			6.80	4.90	
Lebanon-3 .....				6.15				
Minnequa-14 .....	3.60	4.50	4.70	6.15		9.35	4.90	
Pittsburgh-77 .....								
Pittsburgh-78 .....				6.15				
Pittsburgh-5 .....								
Pittsburgh-24 .....				6.65			4.85	
Seattle-3 .....				6.65			4.65	
Steeleton-3 .....	3.60		4.70				4.50	
Struthers-6 .....				6.15				
Torrance-24 .....							4.65	
Youngstown-4 .....				6.15				

**BOILER TUBES** \$ Per 100 ft., cart. 10 to 24 ft.

F.o.b. Mill	Size		Seamless		Elec. Weld	
	Od-in.	W. B. Ga.	H. R.	C. D.	H. R.	C. D.
Babcock & Wilcox . . .	2	13	22.67	26.66	21.99	25.96
	2½	12	30.48	35.84	29.57	34.71
	3	12	33.90	39.90	32.80	38.76
	3½	11	42.37	49.69	41.10	48.30
	4	10	52.60	61.88	51.03	60.05
National Tube . . . . .	2	13	21.62	26.48	.....	.....
	2½	12	29.65	36.32	.....	.....
	3	12	34.00	41.64	.....	.....
	3½	11	40.34	49.41	.....	.....
	4	10	51.21	62.72	.....	.....
Pittsburgh Steel . . . .	2	13	.....	27.06	.....	.....
	2½	12	30.49	37.15	.....	.....
	3	12	34.95	42.59	.....	.....
	3½	11	41.48	50.54	.....	.....
	4	10	52.65	64.16	.....	.....

## FLUORSPAR

Washed gravel, f.o.b. Rosiclare, Ill.  
Price, net ton: Effective  $\text{CaF}_2$  content:

70% or more.....	\$43.00
60% or less.....	40.00

## WAREHOUSES

Base price, f.o.b., dollars per 100 lb. \* (Metropolitan area delivery add 20¢ except Birmingham, San Francisco, Cincinnati, New Orleans, St. Paul, add 15¢; Memphis, add 10¢; Philadelphia, add 25¢; New York, add 30¢).

Cities	Sheets			Strip		Plates		Shapes		Bars		Alloy Bars			
	Hot-Rolled	Cold-Rolled (15 gage)	Galvanized (10 gage)	Hot-Rolled	Cold-Rolled	Standard	Structural	Hot-Rolled	Cold-Finished	Hot-Rolled A 4015	Cold-Finished A 4015	Hot-Rolled A 4140	Cold-Drawn A 4015	Cold-Drawn A 4140	Annealed
Baltimore	5.60	6.84	7.49 <sup>2</sup>	6.04	.....	5.80	6.14	6.04	6.84-6.89	10.24	10.54	11.89	12.19		
Birmingham*	5.80	6.40	6.75	5.55	.....	5.95	5.70	5.55	.....	.....	.....	.....	.....	.....	.....
Bozeman	6.20	7.00	7.74	6.15	8.50 <sup>4</sup>	6.45	6.20	6.05	6.79	10.25	10.55	11.90	12.20	12.00	12.30
Buffalo	5.60	6.40	7.74	5.96	.....	6.05	5.80	5.90	6.40	10.15	10.45	11.80	11.98	12.10	12.10
Chicago	5.60	6.40	7.75	5.55	.....	5.80	5.70	5.55	6.30	9.80	10.10	11.45	11.75		
Cincinnati*	5.87	6.44	7.39	5.80	.....	6.19	6.09	5.90	6.61	10.15	10.45	11.80	12.10		
Cleveland	5.60	6.40	8.10	5.69	6.90	5.92	5.82	5.57	6.40	9.91	10.21	11.56	11.86		
Detroit	5.78	6.53	7.89	5.94	.....	5.99	6.09	5.84	6.56	10.11	10.41	11.76	12.06		
Houston	7.00	8.25	.....	.....	.....	6.85	6.50	6.65	9.35	10.35	11.25	.....	12.75		
Indianapolis, del'd	6.00	6.80	8.15	5.95	.....	6.20	6.10	5.95	6.80	.....	.....	.....	.....	.....	.....
Kansas City	6.00	6.80	7.45	6.15	7.50	6.40	6.30	6.15	7.00	10.40	10.70	12.05	12.35		
Los Angeles	6.35	7.90	8.85	6.40	9.45 <sup>6</sup>	6.40	6.35	6.35	8.20	11.30	11.30	13.20	13.50		
Memphis*	6.33	7.08	.....	6.33	.....	6.43	6.33	6.08	7.18	.....	.....	.....	.....	.....	.....
Milwaukee	5.74	6.54	7.99	5.69	.....	5.94	5.84	5.69	6.44	9.94	10.24	11.59	11.89		
New Orleans*	5.70	6.69	.....	5.75	7.25	5.95	5.75	5.75	7.30	.....	.....	.....	.....	.....	.....
New York*	5.67	7.19 <sup>8</sup>	8.14 <sup>3</sup>	6.29	8.63 <sup>4</sup>	6.28	6.10	6.12	6.99	10.05	10.35	11.70	12.10	12.10	12.20
Norfolk	5.97	7.24 <sup>1</sup>	.....	6.89	.....	5.58	.....	.....	.....	.....	.....	.....	.....	.....	.....
Philadelphia*	5.90	6.80	8.00	0.10	.....	6.05	5.90	6.05	8.86	9.90	10.20	.....	.....	.....	.....
Pittsburgh	5.60	6.40	7.75	5.65	.....	5.75	5.70	5.55	6.15	9.80	10.10	11.45	11.75		
Portland	6.80	8.85	8.50	7.30	.....	6.80	6.95	6.90	.....	.....	12.15	.....	.....	.....	.....
Salt Lake City	7.55	9.10	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
San Francisco*	7.95	9.70	10.50 <sup>2</sup>	8.75	.....	8.05	6.75	7.95	9.00	.....	.....	.....	.....	.....	.....
Seattle	6.85	8.05 <sup>3</sup>	8.55	6.60	9.45 <sup>6</sup>	6.50	6.45	6.45	8.20	11.30	11.30	13.20	13.50	13.50	13.50
St. Louis	7.05	8.60	9.20	9.05	.....	6.75	6.65	6.75	9.05	.....	.....	.....	.....	.....	.....
St. Paul	5.80	6.65	8.00	5.80	8.00 <sup>4</sup>	6.13	6.03	5.80	6.55	10.05	10.35	11.70	12.00		
	5.85	6.70	8.05	5.85	8.28	.....	.....	.....	6.65	.....	.....	.....	.....	.....	.....
	6.16	6.96	8.31	6.11	.....	6.36	6.26	6.11	6.96	10.36	10.66	12.01	12.31		

BASE QUANTITIES (Standard unless otherwise keyed): Cold finished bars: 2000 lb or over. Alloy bars: 1000 to 1999 lb. All others: 2000 to 9999 lb. All HR products may be combined for quantity. All galvanized sheets may be combined for quantity. CR sheets may not be combined with each other or with galvanized sheets, for quantity.

EXCEPTIONS: (1) 400 to 1499 lb; (2) 450 to 1499 lb; (3) 400 to 1999 lb; (4) 6000 lb and over; (5) 1500 to 9999 lb; (6) 2000 to 9999 lb.

## PIG IRON

Dollars per gross ton, f.o.b., subject to switching charges.

Producing Point	Basic	No. 2 Foundry	Malleable	Bessemer	Low Phos.	Blast Furnace Silvery	Low Phos. Charcoal
Bethlehem-3	54.00	54.50	55.00	55.50	.....	.....	.....
Birmingham-4	48.38	48.88	.....	.....	.....	.....	.....
Birmingham-51	48.38	48.88	.....	.....	.....	.....	.....
Birmingham-92	48.38	48.88	.....	.....	.....	.....	.....
Buffalo-4	52.00	52.50	53.00	.....	.....	.....	.....
Buffalo-53	52.00	52.50	53.00	.....	.....	63.75	.....
Chicago-94	52.00	52.50	53.00	53.00	.....	.....	.....
Cleveland-2	52.00	52.50	53.00	53.00	67.00	.....	.....
Cleveland-4	52.00	52.50	53.00	.....	.....	.....	.....
Dalingerfield, Tex.-95	48.00	48.50	48.50	.....	.....	.....	.....
Duluth-84	52.00	52.50	53.00	53.00	.....	.....	.....
Erie-84	52.00	52.50	53.00	53.00	.....	.....	.....
Everett, Mass.-86	.....	51.75	52.25	.....	.....	.....	.....
Fontana-19	56.00	56.50	.....	.....	.....	.....	.....
Geneva, Utah-16	52.00	52.50	53.00	53.00	.....	.....	.....
Granite City, Ill.-102	53.90	54.40	54.90	.....	.....	.....	.....
Hubbard, Ohio-6	52.00	52.50	53.00	.....	.....	.....	.....
Ironton, Utah-16	52.00	52.50	.....	.....	.....	.....	.....
Jackson, Ohio-97, 98	.....	.....	.....	.....	62.50	.....	66.00
Lyra, Tenn.-101	54.00	54.50	55.00	.....	.....	.....	.....
Monsieur-18	52.00	52.50	53.00	53.00	.....	.....	.....
Neville Island-99	52.00	52.50	53.00	53.00	.....	.....	.....
Pittsburgh-1	52.00	52.50	53.00	53.00	.....	.....	.....
Sharpsville-100	52.00	52.50	53.00	53.00	60.00	.....	.....
Steelton-3	54.00	54.50	55.00	55.00	.....	.....	.....
Swedeland-28	56.00	56.50	57.00	57.50	.....	.....	.....
Tolado-94	52.00	52.50	53.00	53.00	.....	.....	.....
Troy, N. Y.-4	54.00	54.50	55.00	.....	60.00	.....	.....
Youngstown-6	52.00	52.50	53.00	53.00	.....	.....	.....

DIFFERENTIALS: Add 50¢ per ton for each 0.25 pct silicon over base (1.75 to 2.25 pct), 50¢ per ton for each 0.50 pct manganese over 1 pct, \$2 per ton for 0.5 to 0.75 pct nickel, \$1 for each additional 0.25 pct nickel. Subtract 38¢ per ton for phosphorus content over 0.70 pct. Silvery iron: Add \$1.50 per ton for each 0.50 pct silicon over base (6.01 to 6.50 pct) up to 17 pct. \$1 per ton for 0.75 pct or more phosphorus, manganese as above. Bessemer ferrosilicon prices are \$1 over comparable silvery iron.

## REFRACTORIES

(F.o.b. works)

## Fire Clay Brick

Carloads, Per 1000

First quality, Ill., Ky., Md., Mo., Ohio, Pa. (except Salina, Pa., add \$5).....\$94.60  
No. 1 Ohio.....88.00  
Sec. quality, Pa., Md., Ky., Mo., Ill. 88.00  
No. 2 Ohio.....79.20  
Ground fire clay, net ton, bulk (except Salina, Pa., add \$1.50).....13.75

## Silica Brick

Mt. Union, Pa., Ensley, Ala.....\$94.60  
Childs, Pa. ....99.00  
Hays, Pa. ....100.10  
Chicago District .....104.50  
Western Utah and Calif.....111.10  
Super Duty, Hays, Pa., Athens, Tex., Chicago .....111.10  
Silica cement, net ton, bulk, Eastern (except Hays, Pa.).....16.50  
Silica cement, net ton, bulk, Hays, Pa. ....18.70  
Silica cement, net ton, bulk, Ensley, Ala. ....17.60  
Silica cement, net ton, bulk, Chicago District .....17.60  
Silica cement, net ton, bulk, Utah and Calif. ....24.70

## Chrome Brick

Per Net Ton

Standard chemically bonded, Balt., Chester .....\$82.00

## Magnesite Brick

Standard, Baltimore .....\$104.00  
Chemically bonded, Baltimore....93.00

## Grain Magnesite

St. ½-in. grains

Domestic, f.o.b. Baltimore, in bulk fines removed.....\$62.70  
Domestic, f.o.b. Chewelah, Wash., in bulk .....36.30  
in sacks .....41.80

## Dead Burned Dolomite

F.o.b. producing points in Pennsylvania, West Virginia and Ohio, per net ton, bulk Midwest, add 10¢; Missouri Valley, add 20¢.....\$13.00

## COKE

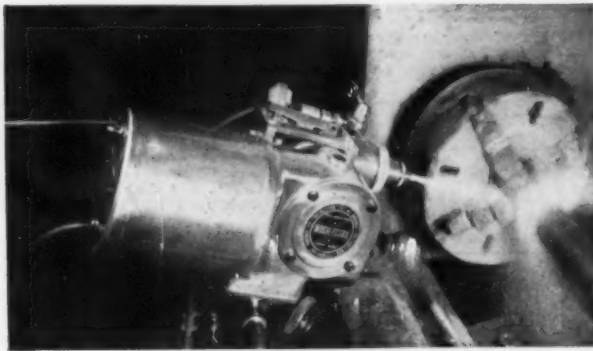
Furnace, beehive (f.o.b. oven) Net Ton  
Connellsville, Pa. ....\$14.50 to \$15.00  
Foundry, beehive (f.o.b. oven)  
Connellsville, Pa. ....\$17.50 to \$18.00  
Foundry, oven coke  
Buffalo, del'd .....\$26.69  
Chicago, f.o.b. ....23.00  
Detroit, f.o.b. ....24.00  
New England, del'd.....24.80  
Seaboard, N. J., f.o.b. ....22.75  
Philadelphia, f.o.b. ....22.70  
Swedeland, Pa., f.o.b. ....22.60  
Painesville, Ohio, f.o.b. ....24.00  
Erie, Pa., f.o.b. ....23.50  
Cleveland, del'd .....25.73  
Cincinnati, del'd .....25.06  
St. Paul, f.o.b. ....22.50  
St. Louis .....25.40  
Birmingham, del'd .....21.69  
Neville Island .....23.00

## LAKE SUPERIOR ORES

(51.50% Fe; natural content, delivered lower lake ports) Per gross ton  
Old range, bessemer.....\$8.70  
Old range, nonbessemer.....8.55  
Mesabi, bessemer .....8.46  
Mesabi, nonbessemer .....8.30  
High phosphorus .....8.30  
After adjustments for analyses, prices will be increased or decreased as the case may be for increases or decreases after Dec. 2, 1950, in lake vessel rates, upper lake rail freights, dock handling charges and taxes thereon.

## C-R SPRING STEEL

F.o.b. Mill Cents Per Lb.	CARBON CONTENT				
	0.26-0.40	0.41-0.60	0.61-0.80	0.81-1.05	1.06-1.38
Bridgeport, Conn.-58	5.35	6.80	7.40	9.35	11.85
Carnegie, Pa.-41	.....	6.80	7.40	9.35	11.65
Cleveland-2	4.65	6.45	7.40	9.35	11.65
Detroit-68	5.60	6.65	7.25	.....	.....
New Castle, Pa.-40	5.35	6.80	7.40	9.35	.....
New Haven, Conn.-68	5.65	6.75	7.35	.....	.....
Sharon, Pa.-13	5.35	6.80	7.40	9.35	11.65
Weirton, W. Va.-9	5.35	6.80	7.40	9.35	11.65
Worcester, Mass.-2	4.95	6.75	7.70	9.65	11.65
Youngstown-48	.....	6.80	7.40	9.35	11.65



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Brazo carbide tipped tools

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Heat treat tools, dies and small metal parts in your own plant. Quick Acting JOHNSON No. 120 Hi-speed delivers 1500° F. in 5 minutes, reaches 2300° F. in 30 minutes. Gets the job done fast to save time and gas. Temperatures easily regulated with accuracy. Firebox 5 x 7 $\frac{3}{4}$  x 13 $\frac{1}{2}$ . Complete with Carbofrax Hearth, G. E. Motor and Johnson Blower.

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**FURNACES FOR INDUSTRY**

## IRON AGE MARKETS & PRICES FOUNDED 1855

### BOLTS, NUTS, RIVETS, SCREWS

#### Consumer Prices

(Base discount, f.o.b. mill, Pittsburgh, Cleveland, Birmingham or Chicago)

#### Machine and Carriage Bolts

	Pot Off List	Less Case	C.
1/2 in. & smaller x 6 in. & shorter	15	28 1/2	
9/16 in. & 5/8 in. x 6 in. & shorter	18 1/2	30 1/2	
3/4 in. & larger x 6 in. & shorter	17 1/2	29 1/2	
All diam. longer than 6 in.	14	27 1/2	
Lag, all diam. x 6 in. & shorter	23	35	
Lag, all diam. longer than 6 in.	21	33	
Plow bolts	34		

#### Nuts, Hot Pressed, Cold Punched—Sq

	Less Keg (Reg.)	K.	Pot Off List	Less Keg (Hvy.)	K.
1/2 in. & smaller	15	28 1/2	15	28 1/2	
9/16 in. & 5/8 in.	12	25	6 1/2	21	
3/4 in. to 1 1/2 in.					
Inclusive	9	23	1	16 1/2	
1 1/2 in. & larger	7 1/2	22	1	16 1/2	

#### Nuts, Hot Pressed—Hexagon

1/2 in. & smaller	26	37	22	34
9/16 in. & 5/8 in.	16 1/2	29 1/2	6 1/2	21
3/4 in. to 1 1/2 in.				
Inclusive	12	25	2	17 1/2
1 1/2 in. & larger	8 1/2	23	2	17 1/2

#### Nuts, Cold Punched—Hexagon

1/2 in. & smaller	26	37	22	34
9/16 in. & 5/8 in.	23	35	17 1/2	30 1/2
3/4 in. to 1 1/2 in.				
Inclusive	19 1/2	31 1/2	12	25
1 1/2 in. & larger	12	25	6 1/2	21

#### Nuts, Semi-Finished—Hexagon

	Reg.	Hvy.
1/2 in. & smaller	35	45
9/16 in. & 5/8 in.	29 1/2	40 1/2
3/4 in. to 1 1/2 in.		
Inclusive	24	36
1 1/2 in. & larger	13	26

#### Light

7/16 in. & smaller	35	45
1/2 in. thru 3/4 in.	28 1/2	39 1/2
3/4 in. to 1 1/2 in.		
Inclusive	26	37

#### Stove Bolts

Packaged, steel, plain finished	48—10
Packaged, plated finish	31—10
Bulk, plain finish**	67*

\*Discounts apply to bulk shipments in not less than 15,000 pieces of a size and kind where length is 3-in. and shorter; 5000 pieces for lengths longer than 3-in. For lesser quantities, packaged price applies.

\*\*Zinc, Parkerized, cadmium or nickel plated finishes add 6¢ per lb net. For black oil finish, add 2¢ per lb net.

#### Rivets

1/2 in. & larger	Base per 100 lb
	Pot Off List

7/16 in. & smaller	34
F.o.b. Pittsburgh, Cleveland, Chicago, Birmingham, Lebanon, Pa.	

#### Cap and Set Screws

(In bulk) Pot Off List

Hexagon head cap screws, coarse or fine thread, 1/4 in. thru 5/8 in. x 6 in., SAE 1020, bright	54
3/4 in. thru 1 in. up to & including 6 in.	48
1/4 in. thru 5/8 in. x 6 in. & shorter high C double heat treat	46
3/4 in. thru 1 in. up to & including 6 in.	41
Milled studs	35
Flat head cap screws, listed sizes	16
Fillister head cap, listed sizes	34
Set screws, sq head, cup point, 1 in. diam and smaller x 6 in. & shorter	53

#### S. M. Ferrochrome

Contract price, cents per pound, chromium contained, lump size, delivered.

High carbon type: 60-65% Cr, 4-6% Si, 4-6% Mn, 4-6% C	
Carloads	21.60
Ton lots	23.75
Less ton lots	25.25
Low carbon type: 62-66% Cr, 4-6% Si, 4-6% Mn, 1.25% max. C	
Carloads	27.75
Ton lots	30.05
Less ton lots	31.85



## ELECTRODES

Cents per lb., f.o.b. plant threaded  
electrodes with nipples, unboxed

Diam. in.	Length in.	Cents Per lb.
GRAPHITE		
17, 18, 20	60, 72	17.85
8 to 16	48, 60, 72	17.85
7	48, 60	19.57
6	48, 60	20.95
4, 5	40	21.50
3	40	22.61
2 1/2	24, 30	23.15
2	24, 30	25.36
CARBON		
40	100, 110	8.03
35	65, 110	8.03
30	65, 84, 110	8.03
24	72 to 104	8.03
20	84, 90	8.03
17	60, 72	8.03
14	60, 72	8.57
10, 12	60	8.84
8	60	9.10

## CLAD STEEL

Base prices, cents per pound, f.o.b. mill  
Stainless-carbon Plate Sheet

No. 304, 20 pct.	
Coatesville, Pa. (21)...	*29.5
Washgtn, Pa. (39)...	*29.5
Claymont, Del. (29)...	*28.00
Conshohocken, Pa. (26)	*24.00
New Castle, Ind. (55)...	*25.50
Nickel-carbon	
10 pct Coatesville (21)...	32.5
Inconel-carbon	
10 pct Coatesville (21)...	40.5
Monel-carbon	
10 pct Coatesville (21)...	33.5
No. 302 Stainless-copper	
stainless, Carnegie, Pa.	
(60) .....	77.00
Aluminized steel sheets, hot	
dip, Butler, Pa. (7).....	7.75

\*Includes annealing and pickling, or  
sandblasting.

## TOOL STEEL

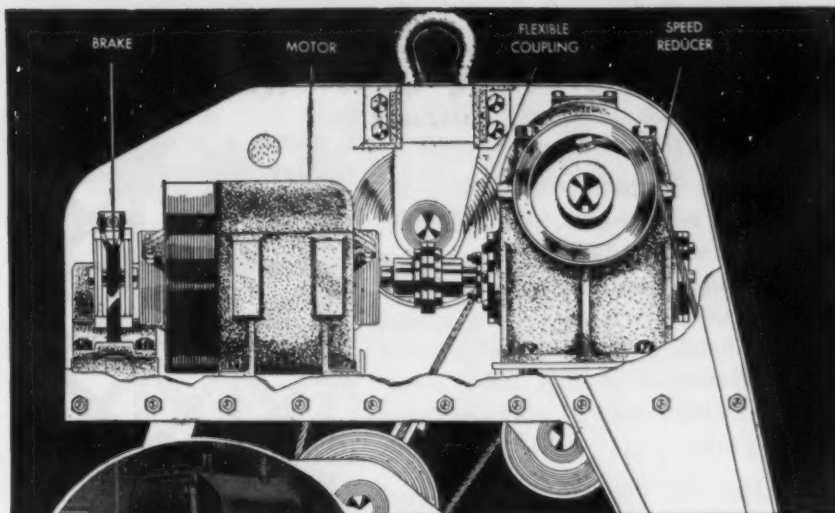
F.o.b. mill

W	Cr	V	Mo	Co	Base per lb
18	4	1	—	—	\$1.235
18	4	1	—	5	\$1.36
18	4	2	—	—	\$1.38
1.5	4	1.5	8	—	78.5¢
6	4	2	6	—	87¢
High-carbon chromium .....					63.5¢
Oil hardened manganese .....					35¢
Special carbon .....					32.5¢
Extra carbon .....					27¢
Regular carbon .....					23¢
Warehouse prices on and east of Mis-					
sissippi are 3¢ per lb higher. West of					
Mississippi, 5¢ higher.					

## METAL POWDERS

Per pound, f.o.b. shipping point, in ton  
lots, for minus 100 mesh.

Swedish sponge iron c.i.f.	
New York, ocean bags...	7.4¢ to 9.0¢
Canadian sponge iron, del'd.	
In East .....	10.00¢
Domestic sponge iron, 98+%	
Fe, carload lots.....	9.0¢ to 15.0¢
Electrolytic iron, annealed,	
99.5+ % Fe .....	36.0¢ to 39.5¢
Electrolytic iron, unannealed,	
minus 325 mesh, 99+ % Fe	48.5¢
Hydrogen reduced iron, mi-	
nus 300 mesh, 98+ % Fe.	63.0¢ to 80.0¢
Carbonyl iron, size 5 to 10	
micron, 98%, 99.8+ % Fe	83.0¢ to \$1.48
Aluminum .....	29.00¢
Brass, 10 ton lots.....	30.00¢ to 33.25¢
Copper, electrolytic, 10.75¢ plus metal value	
Copper, reduced ... 10.00¢ plus metal value	
Cadmium, 100-199 lb. .95¢ plus metal value	
Chromium, electrolytic, 99%	
min. and quantity.....	\$3.50
Lead .....	7.5¢ to 12.0¢ plus metal value
Manganese .....	52.00¢
Molybdenum, 99% .....	\$2.65
Nickel, unannealed .....	88.0¢
Nickel, annealed .....	95.0¢
Nickel, spherical, unannealed	92.0¢
Silicon .....	38.5¢
Solder powder .. 6.5¢ to 8.5¢ plus met. value	
Stainless steel, 302.....	83.00¢
Stainless steel, 316.....	\$1.10
Tin .....	14.00¢ plus metal value
Tungsten, 99% .....	\$4.15
Zinc, 10 ton lots.....	23.0¢ to 30.5¢



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ABOVE YOU SEE WHY the Erie Electric Bucket works in its own headroom controlled from the crane cab. This sturdily constructed bucket needs only to be hooked over the crane hook and power line plugged in. The man in the cab controls the opening of the bucket from cracking the lips to any degree of opening or closing. The extra in-built weight permits easy penetration. Write for complete particulars

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ELECTRIC OVERHEAD TRAVELING CRANES  
PORTABLE CONCRETE PLANTS

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Says Steel Man

Marking  
HOT Plates at  
1800° F

"Poor identification made with an inferior crayon burned off. In error, a soft iron slab went through the rolls which were set for a high carbon slab, causing a cobbler and ruining the rolls, with a big loss of time. MARKAL PAINTSTIKS stopped this waste of money, time and production."

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PAINTSTIKS

are PERMANENT—Weatherproof, Fadeproof

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MARKAL PAINTSTIK—the Original!Write for FREE SAMPLE. We'll gladly help with  
any marking problem. Ask us.

MARKAL CO.

3088 W. Carroll Ave., Chicago 12, Ill.

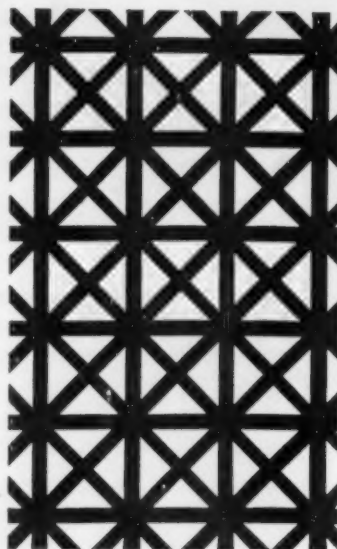
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This is a lightweight type of grille especially suited for radiator enclosures, stove panels, kitchen cabinets, clothes and broom closets, lockers, and similar applications. It is made of a special bright finish, cold rolled steel, suitable for painting or plating, and is available in a wide range of stock size sheets and gauges.

Hendrick Ornamental can be furnished in a variety of attractive designs, the one illustrated being "Smalcane." Write for full information.



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Perforated Metal Screens  
Wedge-Slot Screens  
Architectural Grilles  
Mitco Open Steel Flooring,  
Shur-Site Treads, Armorgrids

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## GEO. F. MARCHANT COMPANY

1420-34 So. ROCKWELL ST., CHICAGO 8, ILL.

## IRON AGE MARKETS & PRICES

### ELECTRICAL SHEETS

22 Ga. H-R cut lengths

F.o.b. Mill Cents Per Lb.	Armature	Elec.	Motor	Dynamo	Transf. 72	Transf. 65	Transf. 48
Beech-Bottom-15	7.25	8.50	9.30	9.85	10.40	11.10	
Brackenridge-28	7.25	8.50	9.30	9.85	10.40	11.10	
Follansbee-63	6.75	7.25	8.50	9.30	9.85	10.40	11.10
Granite City-22	7.95	9.20					
Ind. Harbor-3	6.75	7.25					
Mansfield-75	7.25	7.75	9.00	9.80			
Niles, O.-64	7.05	7.55					
Vandergrift-1	6.75	7.25	8.50	9.30	9.85	10.40	11.10
Warren, O.-4	6.75	7.25	8.50	9.30	9.85	10.40	11.10
Zanesville-7	6.75	7.25	8.50	9.30	9.85	10.40	11.10

### Ferrochrome

Contract prices, cents per pound, contained Cr, lump size, bulk, in carloads, delivered. (65-72% Cr, 2% max. Si.)

0.06% C	30.50	0.20% C	29.50
0.10% C	30.00	0.50% C	29.25
0.15% C	29.75	1.00% C	29.00
2.00% C			28.75
65-69% Cr, 4-9% C			22.00
62-66% Cr, 4-6% C, 6-9% Si			22.50

### High-Nitrogen Ferrochrome

Low-carbon type: 67-72% Cr, 0.75% N. Add 5¢ per lb to regular low carbon ferrochrome price schedule. Add 5¢ for each additional 0.25% N.

### Chromium Metal

Contract prices, per lb chromium contained, packed, delivered, ton lots. 97% min. Cr, 1% max. Fe.

0.20% max. C	\$1.09
0.50% max. C	1.05
.00 min. C	1.04

### Low Carbon Ferrochrome Silicon

(Cr 34-41%, Si 42-49%, C 0.05% max.) Contract price, carloads, f.o.b. Niagara Falls, freight allowed; lump 4-in. x down, bulk 2-in. x down, 21.75¢ per lb of contained Cr plus 12.00¢ per lb of contained Si. Bulk 1-in. x down, 21.90¢ per lb contained Cr plus 12.20¢ per lb contained Si.

### Calcium-Silicon

Contract price per lb of alloy, dump, delivered.

30-33% Ca, 60-65% Si, 3.00% max. Fe	19.00
Carloads	22.10
Ton lots	23.00
Less ton lots	23.00

### Calcium-Manganese-Silicon

Contract prices, cents per lb of alloy, lump, delivered.

16-20% Ca, 14-18% Mn, 53-59% Si	20.00
Carloads	22.30
Ton lots	23.30
Less ton lots	23.30

### CM52

Contract price, cents per lb of alloy, delivered.

Alloy 4: 45-49% Cr, 4-6% Mn, 18-21% Si, 1.25-1.75% Zr, 3.00-4.5% C	12.50
Alloy 5: 50.56% Cr, 4-6% Mn, 16.00% Si, 0.75 to 1.25% Zr, 3.50-5.00% C	20.75
Ton lots	22.00
Less ton lots	22.00

### V Foundry Alloy

Cents per pound of alloy, f.o.b. Suspension Bridge, N. Y., freight allowed, max. St. Louis. V-5: 38-42% Cr, 17-19% Si, 8-11% Mn.

Ton lots	16.50¢
Less ton lots	17.75¢

### Graphidox No. 4

Cents per pound of alloy, f.o.b. Suspension Bridge, N. Y., freight allowed, max. St. Louis. Si 48 to 52%, Ti 9 to 11%, Ca 5 to 7%.

Carload packed	18.00¢
Ton lots to carload packed	19.00¢
Less ton lots	20.50¢

### SMZ

Contract price, cents per pound of alloy, delivered, 60-65% Si, 5-7% Mn, 5-7% Zr, 20% Fe, ½ in. x 12 mesh.

Ton lots	17.25
Less ton lots	18.50

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is helping plants like yours  
do a faster, better job at low cost!



HOUGHTON

## HOUGHTO-CLEAN 313-A

prepares steel for finishing as it cleans

In tests and in use, this quick-acting acid phosphate cleaner is proving its effectiveness in metal and maintenance cleaning. It removes soil, oils, compounds and other coatings speedily and economically. Even without its other advantages Houghto-Clean 313-A would be outstanding. One of these extra advantages is the increased adhesion it provides for paint, lacquer and other finishes. The light, tough phosphate film it leaves on metals also resists corrosion if the finish is scratched or broken. And it keeps corrosion from spreading in case this coating is accidentally scraped off. Corrosion is halted wherever the metal is covered by the Houghto-Clean 313-A film!

You'll find this acid phosphate cleaner is easy to apply. It needs no special tanks or equipment. Try a drum of Houghto-Clean 313-A and notice how it helps you save on paint, too. Or write for further information to E. F. Houghton & Co., Philadelphia 33, Pa.

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... a product of

**E. F. HOUGHTON & CO.**  
PHILADELPHIA • CHICAGO • DETROIT • SAN FRANCISCO



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on-the-job service ...

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#### Houghto-Clean 220

— an emulsion type product widely used as a general purpose production line cleaner in still tanks or power washers.

#### Cerfak Liquid

— synthetic detergent ideal for cleaning heat treated work; up to 10 times faster than ordinary cleaners.

#### Alkaline Cleaners

— a series of Houghton-developed cleaners for specific light, medium and heavy duty work.



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VITAL**

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KEEP IT  
FLOWING

through your  
regular channels

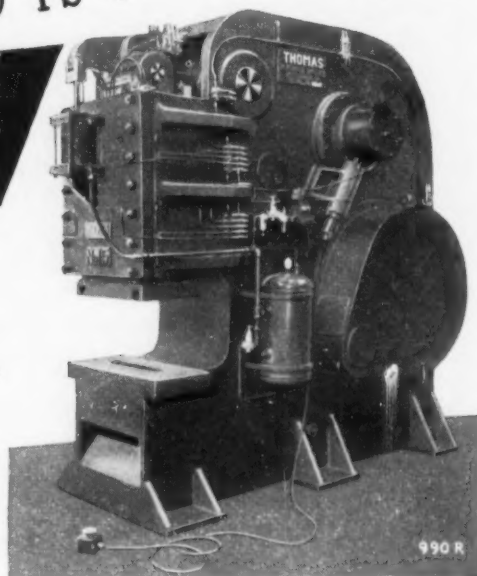
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DEFENSE PROGRAM

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- + Cast Steel Moving Parts
- + Air Operated Clutch
- + Air Counterbalance
- + Quick Tool Changes



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in a matter of minutes

For rounds, squares, flats,  
angles or channels

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MACHINE MANUFACTURING COMPANY

PITTSBURGH (23), PA.

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### IRON AGE MARKETS & PRICES FOUNDED 1855

#### FERROALLOYS

##### Ferromanganese

78-82% Mn, maximum contract base  
price, gross ton, lump size.  
F.o.b. Niagara Falls, Alloy, W. Va.,  
Welland, Ont., Ashtabula, O. .... \$1.65  
F.o.b. Johnstown, Pa. .... \$1.67  
F.o.b. Sheridan, Pa. .... \$1.68  
F.o.b. Etna, Clairton, Pa. .... \$1.68  
\$2.00 for each 1% above 82% Mn,  
penalty, \$2.15 for each 1% below 78% Mn.  
Briquets—Cents per pound of briquet,  
delivered, 68% contained Mn.  
Carload, bulk ..... 10.96  
Ton lots ..... 12.55

##### Spiegeleisen

Contract prices gross ton, lump, f.o.b.  
16-19% Mn 19-21% Mn  
3% max. Si 3% max. Si  
Palmerton, Pa. \$74.00 \$75.00  
Pgh. or Chicago 74.00 75.00

##### Manganese Metal

Contract basis, 2 in. x down, cents per  
pound of metal, delivered.  
96% min. Mn, 0.2% max. C, 1% max.  
Si, 2% max. Fe.  
Carload, packed ..... 34.73  
Ton lots ..... 36.23

##### Electrolytic Manganese

F.o.b. Knoxville, Tenn., freight allowed  
east of Mississippi, cents per pound.  
Carloads ..... 32  
Ton lots ..... 32  
Less ton lots ..... 32

##### Medium Carbon Ferromanganese

Mn 80% to 85%, C 1.25 to 1.50. Contract  
price, carloads, lump, bulk, delivered, per  
lb. of contained Mn ..... 19.15

##### Calcium Metal

Eastern zone contract prices, cents per  
pound of metal, delivered.  
Cast Turnings Distilled  
Ton lots ..... \$2.05 \$2.95 \$3.75  
Less ton lots.. 2.40 3.30 4.55

##### Silicomanganese

Contract basis, lump size, cents per  
pound of metal, delivered, 65-68% Mn,  
18-20% Si, 1.5% max. C. For 2% max. C,  
deduct 0.2¢.  
Carload bulk ..... 9.90  
Ton lots ..... 11.55  
Briquet, contract basis carlots, bulk  
delivered, per lb of briquet ..... 11.15  
Ton lots ..... 11.75

##### Silvery Iron (electric furnace)

Si 14.01 to 14.50 pct, f.o.b. Keokuk,  
Iowa, or Wenatchee, Wash., \$92.50 gross  
ton, freight allowed to normal trade area.  
Si 15.01 to 15.50 pct, f.o.b. Niagara Falls,  
N. Y., \$83.00. Add \$1.00 per ton for each  
additional 0.50% Si up to and including  
18%. Add \$1.00 for each 0.50% Mn over  
1%.

##### Silicon Metal

Contract price, cents per pound con-  
tained Si, lump size, delivered, for ton lots  
packed.  
96% Si, 2% Fe ..... 21.70  
97% Si, 1% Fe ..... 22.10

##### Silicon Briquets

Contract price, cents per pound of  
briquet bulk, delivered, 40% Si, 1 lb 80  
briquets.  
Carload, bulk ..... 0.95  
Ton lots ..... 8.55

##### Electric Ferrosilicon

Contract price, cents per pound con-  
tained Si, lump, bulk, carloads, delivered.  
25% Si ..... 19.00 75% Si ..... 14.30  
50% Si ..... 12.40 85% Si ..... 15.55  
90-95% Si ..... 17.65

##### Low-Carbon Ferromanganese

Contract price, cents per pound Mn con-  
tained, lump size, del'd, Mn 85-90%.  
Carloads Ton Less  
0.7% max. C, 0.06%  
P, 90% Mn ..... 26.25 28.10 29.30  
0.07% max. C ..... 25.75 27.60 28.80  
0.15% max. C ..... 25.25 27.10 28.30  
0.30% max. C ..... 24.75 26.60 27.80  
0.50% max. C ..... 24.25 26.10 27.30  
0.75% max. C ..... 21.25 23.10 24.30

act base

7a.  
... \$165  
... \$187  
... \$185  
... \$188  
2% Mn.  
w 78%  
briquet.

... 10.96  
... 12.55

f.o.b.  
-21% Mn  
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\$75.00  
75.00

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% max.

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... 36.25

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Distilled  
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... 15.55  
... 17.50

Mn con-

%

Less

25.30

28.50

28.30

27.80

27.30

24.30

1951



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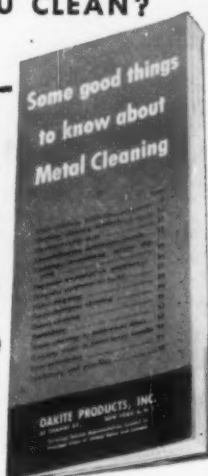
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Rua Da Quitanda 96, Sao Paulo

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- ☐ oils and greases
- ☐ heat scale
- ☐ tarnish
- ☐ rust, oxides
- ☐ carbon smuts
- ☐ flux residues
- ☐ rust preventives

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## • News of Industry •

### Commercial, Captive Mines Are at Opposite Poles of Supply

**Birmingham** — Commercial and captive coal mines in this area are in contrasting positions of supply.

Commercial coal companies report their yards and supplies are practically exhausted as a result of the unusually cold winter. Spokesmen estimate 73,018 cars will be needed in the next quarter to handle the coal to be mined. This compares with 69,541 cars used in the second quarter of 1950.

On the other hand, iron and steel mills report a heavy surplus of coal on hand that necessitates curtailment of some operations. Tennessee Coal, Iron & Railroad Company has closed its Hamilton mine, employing 500 men, indefinitely.

Sloss-Sheffield Steel & Iron Co. has announced one of its mines will be closed in April and May, idling 250 men, and that it may not be reopened. Alabama By-Products Company has reduced its

operations, but none have been completely closed. Woodward Iron Co. and Republic Steel Corp. have not yet announced any curtailments.

### Industrial Building Rate Grows

**Washington** — American business and industry has scheduled approximately \$24 billion worth of plant building and equipment buying for 1951, estimates the Office of Business Economics. This is a third more than last year's \$18.5 billion.

Manufacturing will make the greatest investment—\$12 billion as against 1949's \$8.2 billion. Railroads will increase capital investment by a third, from \$1.1 billion to \$1.5 billion.

### BIF Trade Show Apr. 30-May 11

**New York**—The largest display of engineering equipment ever assembled, including scores of units in operation, will be an outstanding attraction at the 1951 British Industries Fair at London and Birmingham, England, Apr.

This advertisement is neither an offer to sell nor a solicitation of offers to buy any of these securities.  
The offering is made only by the Prospectus.

NEW ISSUE

March 29, 1951

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Merrill Lynch, Pierce, Fenner & Beane	Stone & Webster Securities Corporation	
Union Securities Corporation	White, Weld & Co.	



## • News of Industry •

30 to May 11. The exhibition hall at Castle Bromwich, Birmingham, 12 times bigger than New York's Madison Square Garden, has its own railroad terminal and airport.

### Republic Has Enough Iron Ore For Decades at Rate of Use Now

Cleveland—Republic Steel Corp. has enough iron ore assured for its needs at the present rate of operations for many decades, said T. M. Girdler, chairman, and C. M. White, president, in their annual stockholders' report.

Outlining 1950 development of ore sources in Labrador and Liberia and in the taconite beneficiating program of the Reserve Mining Co., they also pointed out that in 1950 Republic leased coal lands containing about 18 million tons of good coking coal near Pikeville, Ky.

### Stock Option Plan

Looking ahead, the Republic officials forecast "a continued high level of industrial production rising to new postwar records in the latter part of the year." They proposed a stock option plan to permit key employees to buy stock.

Earnings in 1950 reached a new high of \$63,794,711 but shipments were slightly under the record. The report also said Republic's steelmaking capacity was increased by 267,000 tons in 1950.

### Cleveland Welding Group to Meet

Cleveland — The American Welding Society section here will hold its twelfth annual welding conference on May 11 at the Hotel Allerton. Technical speakers will be James Hyslop, president Hanna Coal Co.; Ross Yarrow, Republic Structural Iron Works; and Sherman Heald, Republic Steel Corp. Theme of the talks will stress the importance of welding in mobilization.

Sen. Karl Mundt will speak at the banquet. Reservations may be made with the Symposium Committee, American Welding Society, Hotel Allerton, Cleveland. Jack Jarms is chairman.

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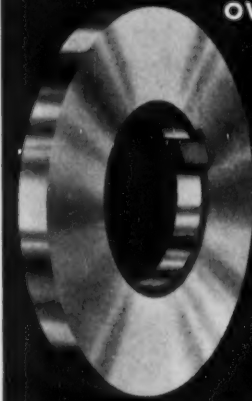
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TOOL COMPANY**

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CORPORATION

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looks more like a busy, little  
beaver than a wise, old owl  
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See our  
Advt on  
Page 173  
Apr. 5th

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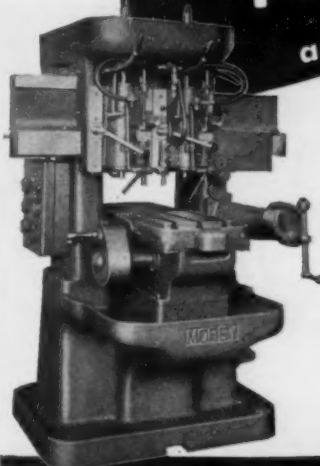
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1042 cu. ft. Ingersoll Rand XCB2 20" x 12"x16", With 200 H.P. Synch. Motor 440/3/60. 100 # Pressure.

### BENDING ROLL

26' Southwark Pyramid Type Plate Bending Roll 24" Diameter Top Roll, 16" Diameter Bottom Rolls, Power Elevation of Top Roll. Elec. Equipment Included

### DRILLING & TAPPING MACHINE

Kingsbury Automatic Drilling & Tapping Machine 7-Station, 12-Head Six Vertical & Six Horizontal. Complete with Electrical Equipment

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### HYDRAULIC SYSTEM

Consisting of 2 tanks 50" dia. x 30" long. Capacity 3000 gal. each designed for 1500 # pressure; Accumulator control; 4 Electrically driven hydraulic pumps 200 GPM @ 1500 # psi with complete electrical equipment

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56" x 30" x 18' Ingersoll Adjustable Rail Slab Milling Machine. Equipped with Trabohn Coolant Pump and 75 H.P. G.E. Induction A.C. Motor

### PRESS—HYDRAULIC FORGING

1000 ton United Steam Hydraulic Forging Press Complete with Accumulator, Intensifier, Tools and 8000 lb. Alliance Straight Line Floor Type Manipulator

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300,000 lb. SOUTHWARK-EMERY Universal Hydraulic Testing Machine  
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# The Clearing House

NEWS OF USED, REBUILT AND SURPLUS MACHINERY

**Air Base Opens Bids**—Robbins Air Force Base, Ga., opened bids last Saturday on contracts to repair and rebuild lots of some 2400 machine tools and 2600 instruments and testing devices formerly in use at that field and others. About 25 machine shop and used machinery people from the New York City area made the rounds of the base checking defects of equipment.

The contingent took the business tour last week after the Commerce and Industry Assn. of New York had spread the information of possible business to local firms. The tools and instruments were not from JANMAT reserves.

**What It Takes**—The task of matching inquiries with equipment is taxing the ingenuity of used and rebuilt equipment dealers and brokers in the Pittsburgh area. Some have developed this ability into a fine art.

They are the ones who even now can take an inquiry and fulfill it, using a good working knowledge of the industry and hard-earned good relations with other dealers. Very often nowadays a dealer with an inquiry must enlist the cooperation of his fellows to round up needed equipment.

**Crane Picture Sour**—The shortage of really good equipment is accentuating the problems of the field in Pittsburgh. Particularly vexing is the now long-term scarcity of usable cranes.

Industrial expansion and extended deliveries for new equipment have virtually swept the boards clean. As usual, it has thrown many traditionally new crane buyers into the used field to the consternation of those who ordinarily made it their pasture.

**Scared of Buying**—One dealer in mill equipment has noted a temporary slowing in demand. It may possibly be due to industry's show of caution over the drop in con-

sumer goods buying, worries over heavy inventories of consumer durable goods, and uncertainty over events in Korea.

Despite reassurances from the government to the contrary, some people may be wondering if production mobilization will falter. Too many harmful stories have appeared in the newspaper describing the more leisurely and less-concerned pace of Washington, now that U.N. troops have fought back in Korea while Russia laid low.

**Not that Eager**—Still plaguing Pittsburgh used machine tool dealers is the difficulty of finding late-type equipment. Buyers are apparently not so desperate yet that they will rush into buying the ancients. Turret lathes are leading the popularity parade.

A specialist in disposing of old plants reports that business was seldom better. Some of these sales result from decisions by banks to salvage something from debtors.

**Louisiana Auction**—Equipment of the tool, die, and metal fabricating plant of the Industrial Engineering Co., Chalmette, La., went on the public auction block on Thursday, Apr. 12. The sale was managed by the Industrial Plants Corp., Chicago.

For sale were jig borers, milling machines, lathes, drills, grinders, shapers, saws, presses, brakes, shears, etc.

**Close to the Source**—After some time of discussion and planning, MDNA has moved its national office from Chicago to Washington, D. C., at Dupont Circle and Connecticut Ave. Logic of the move is undeniable. It will keep the group close to the source of control orders, restrictions.

If something must be protested quickly, J. M. P. Fox, executive secretary, can do it in person instead of sending a telegram or running for the airport.